WATER COLOR PAINTING

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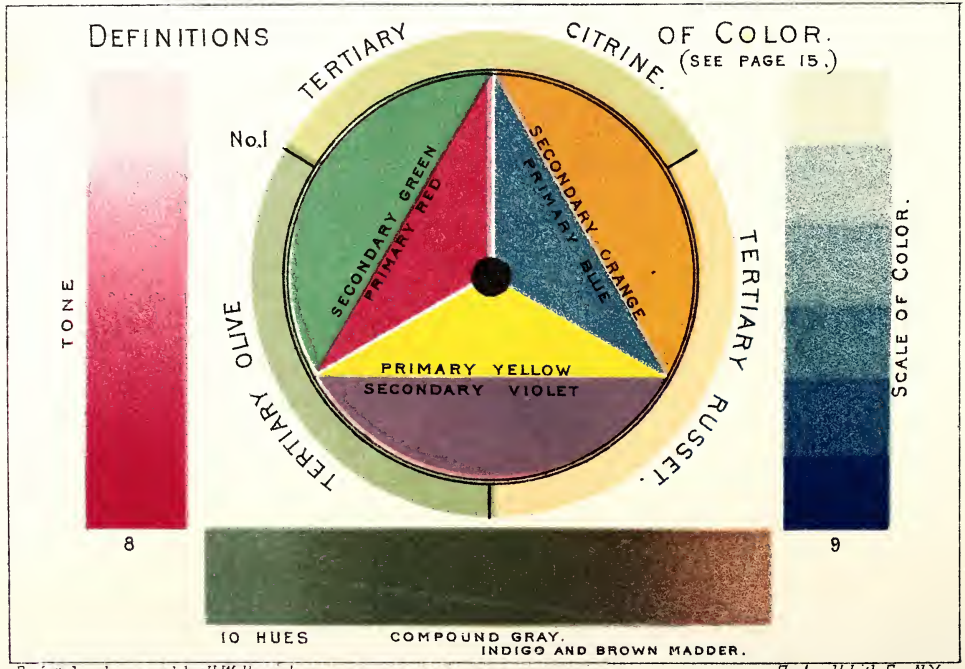
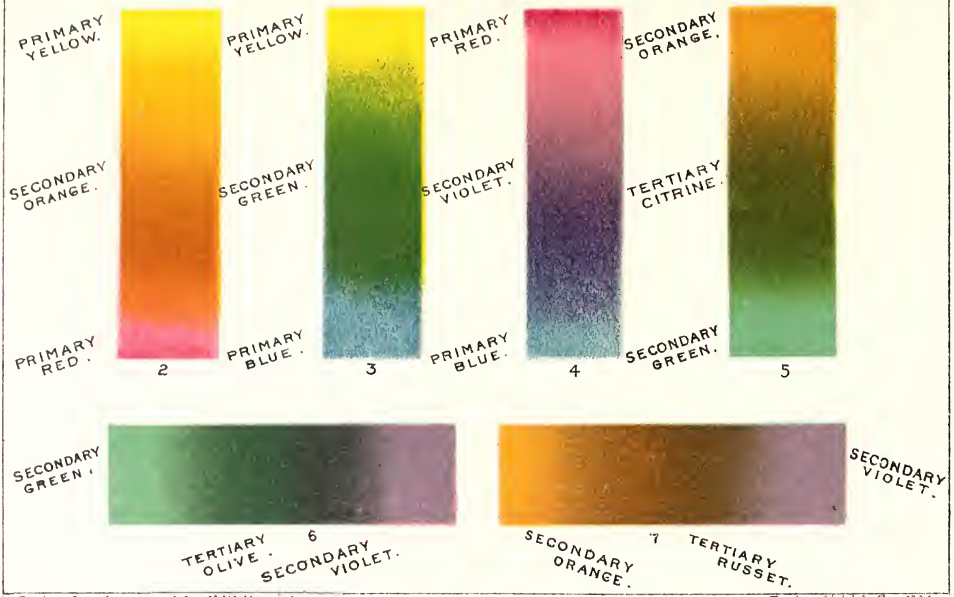
PLATE 1.



Designed and arranged by H.W Herrick. *Cadwell Lith Co. N.Y.*

PLATE 2.

DEFINITIONS OF COLOR. (SEE PAGE 16.)



Designed and arranged by H.W Herrick.

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WATER COLOR PAINTING:

DESCRIPTION OF MATERIALS

WITH

DIRECTIONS FOR THEIR USE IN ELEMENTARY PRACTICE.

SKETCHING FROM NATURE IN WATER COLOR.

BY

H. W. HERRICK.

ILLUSTRATED WITH DIAGRAMS PRINTED IN COLORS.

NEW YORK:
F. W. DEVOE & CO.,
COR. FULTON AND WILLIAM STREETS.

1882.

*** It is recommended to the student to copy in color, the Plates 1 and 2, giving the proper gradations.

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BY

F. W. DEVOE & CO.,

NEW YORK.

NOTE.

A limited number of copies (called the "*Artists' Edition*") is published, containing examples of ONE HUNDRED AND TWENTY COLORS, washed from standard pigments on water-color paper. With perhaps two or three exceptions, this list comprises all of the pigments used by the modern Water-Colorist, and includes colors of English, French and German manufacture. These examples are given in light and deep tones, and they are arranged in the numerical order observed in the descriptive text, on pages 40 to 75.

This more expensive edition can be obtained at the Artists' Supply Stores, or of the Publishers.

L. J. Hardham, Printer, Newark, N. J.

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INTRODUCTION.

This work on Water Color, is arranged in two divisions: the *first*, to meet the wants of teachers of Art classes, and amateurs in private study, as a ready reference book for the qualities and uses of materials; and the *second*, to guide in the first steps of practice, both in the studio, and from nature. While its illustrations of truth are taken from landscape, rather than from figure or flower painting, the principles and methods of working brought forward, are, in practice, equally applicable to all branches of Water Color art.

Much of the prevalent misconception of the capabilities and distrust of the permanency of Water Color, together with the technical difficulties in its use to the beginner, arise from ignorance of the qualities of its materials. These materials constitute the alphabet by which the art-thought is conveyed; and a thorough understanding of them, in the outset of practice, removes a great impediment to success.

The handbooks on the subject in question, now available, are nearly all of English origin; and, as a rule, they make no pretentions to teaching the general theory and philosophy of

art; their size and low price preclude this idea. They have moreover, another sphere; their purpose being to embody in a cheap and popular form, the general technical truths that will facilitate the labors of the young pupil, and lead to careful habits of observation and study. Handbooks should therefore be judged from their use and purpose; they are not class-books, always graded to suit the stage of progress of the learner, but are rather depositories, giving concisely, with no attempt at literary embellishment, the practical experience of their authors.

The interest in Water Color art, has of late increased, as its capabilities have been better understood. Its introduction among the studies of our advanced public schools and private seminaries, shows not only the estimation in which it is held as a convenient and attractive medium of instruction in art, but its adoption is an emphatic testimony to the value of art-study as a mental discipline. This view of the utility of art-education, in maturing the judgment, promoting method in thought, disciplining the eye and hand to accuracy and rapidity in seeing and drawing; in acquiring habits of observation, and sensibility to beauty in color, opens a field of study hardly yet entered upon by our educators.

The increase in the last twenty years of the number of pigments employed in water color, as well as the improve-

ments in other materials, and advance in methods, are sufficient reasons for the adding of an American book to the English handbooks already in our market. Some of the latter were issued forty years since, and none of them contain descriptions of more than fifty-five pigments, while in the following pages more than one hundred will be found to be carefully described. The parts allotted to consideration of the qualities of pencils, brushes, papers, and other materials, will be found to be equally full and complete; while the general suggestions for practice, will, it is hoped, meet most of the requirements of the learner.

Book knowledge of art can lead but a short distance in the path to success in practice. In the following pages it is proposed only to give descriptions of materials, their uses, and the principles governing elementary color practice; the applications of these truths to the demands of advanced art must be left to the intelligence of the pupil as he increases in knowledge and power.

H. W. H.

THEORIES OF COLOR

WITH

EXPLANATION OF COLORED DIAGRAMS,

AND

DEFINITIONS OF TECHNICAL TERMS IN COLOR.

The limits of a work like the present will allow only the most concise mention of the prevailing "theories of Color" as applied to the arts. Many volumes have been written on this subject with a wide divergence of opinion. Authors viewing the subject from the artists' standpoint have perhaps been disposed to undervalue the experiments of scientists with the colors of the solar spectrum; while the scientist with an eye not cultured with the long discipline of the artist, in subtile color distinctions, has possibly drawn erroneous conclusions, from mistakes in judgment of color.

Assuming that the reader is familiar with the experiments with light, showing the decomposition of the sun's ray by the prism into the hues of the rainbow, (solar spectrum), we give a few fundamental points on theories of color as maintained by leading scientists. The most prominent of these theories are found in the teachings of the German and English schools.

About the year 1853, Helmholtz, the celebrated German chemist in his investigations with the colors of the solar spectrum, developed facts, that conflicted with theories of the English school. He maintained that the theory of Sir David Brewster, published in 1837, which assumed that color was inherent in the nature of light, was erroneous; asserting that

the *impression* of color existed only as the ray of light entered the eye and acted on the retina. In other terms, that colors of the spectrum were in no sense physical, or objective, but were produced physiologically.

Helmholtz selected five principal colors or hues of the spectrum which he designated as primary,—red, yellow, green, blue and violet. Many combinations of three of these yielded white light, but notably red, green and violet gave the best results. Dr. Young, an English scientist gave, in 1802, the same preference to the three primaries adopted as the favorites of Helmholtz. The late Prof. Clerk Maxwell, of Cambridge, England, regarded red, green and blue as essentially the only primary colors. Von Bezold, of Munich, and others have in late years made discoveries in this interesting field endorsing the position of Helmholtz, as a basis for their theories. Von Bezold has in the last decade, published his observations, illustrating by many ingenious and interesting experiments, the positions of the German school, and applying his theory to practical purpose in the arts, by a "color chart" and "color cone." The device of the chart was originally produced by Newton, and primarily consisted of the solar spectrum united at its ends, or formed as a ring of color, connected by purple as the uniting medium between the red and violet ends. This color-ring is used by Von Bezold, to show, that if illuminated by solar light of all gradations from the dazzling ray to darkness, it would in these varied conditions represent all conceivable sensations of color. As, however, it would be desirable to have the device show all degrees of brightness in the colors, while the illuminating agent re-

mained the same, a point of pure white was placed in the center, and the colors at the circumference graduated to the white. This would show all the paler conditions of each color. If, conversely, a black spot was formed in the center of a duplicate color-ring, and the colors gradually deepened to the black, it would show the darkened conditions of the spectrum hues. The sum of these two charts, it is claimed, will show all possible colors, the spectrum illuminated or weakened to white light, or obscured to blackness. Brown would thus be obscured yellow; maroon and gray would represent red and blue, seen at a low degree of light.

To render these charts of blended color practical to the artist, they may be covered with a net-work of radial lines and concentric circles, each division of which may contain flat-tints of sharply defined hues of the principal colors at the circumference. A diameter of the circle shows at its ends, complementary colors; and straight connecting lines between any two colors, with proportionate measurements representing the quantity of each color, indicate proximate results of all color-mixtures before the compound is made. As Helmholtz maintains the existence of five primaries, the division of the circumference of the chart into ten parts or sectors, would give the primaries with their complementaries. This color chart is analagous to that of Chevreul, with its movable quadrant. The color cone of Von Bezold further illustrates his theory,—but in rather an ideal way. If the color-ring hues are graduated to the white center, as before mentioned, they form the base of the color cone, or a ground plane. Upon this it is supposed other like charts are

placed, each with its colors a degree deeper than the previous one. As, moreover, with diminished luminosity the number of hues on the charts would be lessened, the size of the charts might be decreased. These multiplied charts one above the other, would with their progressive diminution, furnish by their circumference the outward surface of a perpendicular cone. The brightest colors of this conic spectrum would thus be at the base, and be deepened or strengthened as they approached the apex, where they would be merged in black. The axis of the cone being white at the base, would have a relative increase of hue, (gray) until like the surface color it terminated in black at the apex. Between the axis and outward surface would thus be found all conditions of the pale and broken hues,—the color increasing in brightness, from the gray at the axis to the circumference. The law of the mixture of colors pertaining to the chart, can also be applied to the cone, by straight lines connecting the colors to be united.

The device of the cone, originated by Lambert in 1772, seems to be used as an auxiliary illustration of the system developed by the chart. By their united aid it will be possible to have a geometrical standard for the *hue*, *brightness* and *purity* of color.

An excellent American issue of this work of Von Bezold, makes this color theory accessible to all interested in it.

The color theory that has gained prominence in English text books on art has been ascribed to George Field, and is the prevailing system adopted wholly or in part by most

English writers on the art aspects of color. It is given in the remaining parts of this division, with the author's colored diagrams (in front of this work); but we would remind the reader that all advocates of this so-called "red, yellow and blue" theory, are by no means agreed that it is in all respects, verified by science. In fact, this cannot be claimed absolutely, of any color theory; assumed positions, more or less characterizing all. The proportionate numbers or measurements are at best only approximate, and the result of mixtures is determined by no positive formula other than that of the secondaries and tertiaries.

The terms *primary*, *secondary* and *tertiary*, as applied to these representative classes of colors, are ignored by some writers on art. These designations, are however, used in nearly all educational and technical works on color, in both decorative and pictorial art, and whatever changes may hereafter be accepted in color theory, it is certain that these three classes of colors, represent to the artist, ideas that will always want terms of expression. Red, yellow and blue, evidently dominate all other colors in their power of delighting the eye, at the same time exciting and wearying it. As pigments, they are primary in the sense that they cannot be produced by admixture of other colors. Historically considered, they have been primary in the color-ornamentation of all nations; for, we find in the thirty or more systems of decoration now accepted, these colors are generally used to give emphasis to all points of special importance. The secondaries, come in progressive order not only from mixture of the primaries, but in their secondary positions in

power of exciting the eye. Not only are these mixtures compounded by pigments, but they are made on the retina by reflection, by persistent impression as with the color-disk, and by superimposing the colors of the spectrum. The power of the secondaries in exciting the eye is seen to be in progressive order, and in the same relation they hold as spectral colors or primaries in the spectrum. Thus, orange is the most attractive, partaking of the nature of red, the color most exciting to the retina. Green has, in its ordinary conditions, less power than orange; and violet, in its turn, takes a lower position.

Again, the secondaries, (pigments), by mixture produce the tertiaries, a class of refined hues descending in regular progressive order from their factors in power and attractiveness. For the above reasons, and others which might be mentioned, these color-terms *primary*, *secondary* and *tertiary*, will probably always be used.

Before referring to the Chromatic Diagrams, Plates 1 and 2, we would premise that colors may be classed in five general divisions: Primary, Secondary, Tertiary, Semi-Neutral and Neutral, with their several scales and related scales. The *primaries* of the old theory are red, yellow and blue; the *secondaries*, orange, green and violet; the *tertiaries* citrine, russet and olive; the *semi-neutrals* are represented by browns of a quiet character, or grays slightly modified with color, and the *neutral*, by a normal gray. The Primaries as shown in the solar spectrum are, by optical science, allowed to be seven, viz: red, orange, yellow, green, blue, indigo, (or ultramarine) and violet (or purple); but, as in art, four of these, orange green, ultramarine, and violet, can be produced or compounded

from the remaining three, writers on art who adhere to the old theory, have assumed that in the use of pigments, red, yellow, and blue only, can properly be termed primary.

A color to be primary, must, strictly speaking, be of prismatic intensity; but as no pigments have as yet been found equal to this requirement, it has been customary to designate as primary, the colors nearest to the standard. Rose madder, Aureolin, and genuine or brilliant Ultramarine approach as near the primaries,—red, yellow and blue,—of the spectrum, as any pigments we now possess.

It will be observed, in Plate 1, that the primaries are grouped in an equilateral triangle, and are separated from each other by a body of black in the centre, and a white stripe; it being a principle generally recognized, that the primaries should not be placed in juxtaposition, being heightened by the presence of white and black. A separating medium of white or black, or, if in decorative art, a gold or silver line, is, therefore, a law well understood in grouping these colors. This principle, though found in nature so far as the dark or white intervening agent is concerned, is not without exceptions, for we find in the gorgeous plumage of some tropical birds, brilliant blues and reds, yellows and reds, yellows and blues, contiguous; but such unions are rare.

Let the diagram be so held that blue and red form the vertex of the triangle; the proper union of these two primaries will produce the secondary *violet*,* shown below the

* The word *purple* is sometimes used for the secondary color, *violet*. The true purple is reddish violet of a decided crimson cast, and is not represented in the solar spectrum.

base. The union of the two primaries, blue and yellow, and red and yellow, at the other two angles, will likewise show the resulting secondaries, *green* and *orange*, in like manner. The secondaries are thus enclosed within the chords and arcs of a circle, and point at their several lines of approach, to the three tertiaries formed by their binary union. Thus, green and violet form the tertiary *olive*; green and orange, the tertiary *citrine*; orange and violet, the tertiary *russet*. These unions are, moreover, made with approximate proportions. Thus, eight parts, surface measure, of primary blue, neutralize three like parts of yellow, forming the standard secondary green; eight parts of blue neutralize five parts of red, forming the secondary violet; and five parts of red neutralize three parts of yellow, forming the secondary orange. These truths are illustrated by Plate 2, in six parallelograms of color. It will be observed in these examples, beginning with fig. 2, that the secondaries and tertiaries are formed in regular order from the primaries. A bright yellow representing the primary, is graduated from the top of fig. 2, diminishing in power to a point about one-fourth of an inch from the bottom; from the lower edge the primary red is graduated in like manner to a point near the top. Let the pupil try to fix upon the exact point in the union of these two primaries, where one neutralizes the other;—this will give the secondary *orange*. Proceed in like manner with the remaining examples of the plate.

As *eight* is the combining proportion of blue, *five* the combining proportion of red, *three* the combining proportion of yellow, aggregating sixteen, we find that the proportionate

numbers of any two of these primaries united, give us the proportionate or combining number of their secondary compound. *Eleven* would thus be the combining number of green; *thirteen*, the combining number of violet; *eight*, the combining number of orange; aggregating thirty-two. Again, the proportionate number of any tertiary is found by referring to the proportionate numbers of its factors. Thus, green (11) and orange (8) united, form citrine, the proportionate number of which is nineteen; green (11) and violet (13) uniting to form olive, give us twenty-four as its combining number; orange (8) and violet (13) united to form russet, give twenty-one as its proportionate number; aggregating sixty-four. (See Nos. 5, 6, 7, Plate 2.) Some writers have carried these combinations a degree farther, thus: russet and olive compose dark violet; citrine and olive form dark green; russet and citrine compose dark orange. These combinations are thus brought as near to black as the primaries of the spectrum are to white, and their character becomes very complex.

As the three primaries represent white light, the natural element of the eye, so those combinations of color are most pleasing to the sight, that embody in some near degree, pure or combined, this triad of color. Thus, two of the primaries, yellow and blue, properly combined, constitute bluish green; red is the *absent* primary or *completing* color. We thus say that red is the complementary color of green, and conversely, green complements red. When these statements are made orally the two words complementary and complimentary are often mistaken for each other by the young learner,

and he fails to get the true idea advanced. He will now observe that the relation of red and green as complementaries is the same as that of the two remaining primaries to their related secondaries; yellow, (greenish yellow), the color absent from violet, forms its complementary, and violet complements yellow; blue, the color absent from orange, is its complementary, while orange reciprocally has the same relation to blue. These are the most prominent of the harmonies of contrast.

Transferring this system of complementaries to the tertiaries, we find that two of the secondaries united give some proportion of all of the primaries, one being dominant; the color absent and wanted to complete the proper balance of the primaries would be the complementary. Thus the complementary of citrine is deep violet; the complementary of russet is deep green; the complementary of olive is deep orange.

While the primaries are separated in the triangle of our diagram by black and white, it will be observed that they are placed contiguous to their related secondaries, or complementaries, in conformity to the general law in nature.

This theory of color is thus stated with brevity; if the reader is interested to go farther into a critical examination of it, he is referred to the writings of Owen Jones, Chevreul, Harding, Field, Redgrave, Hay, Church, and others, who have treated the subject with much elaboration, and to great extent. The whole subject yet constitutes debatable ground, and candor requires those holding to this theory to admit that there are points in it assumed rather than deduced from positive

science. The theories of Helmholtz, Von Bezold, Maxwell, Benson, Rood, and others, have lately attracted much notice, and will undoubtedly at no distant day, exert an influence in modifying the color theories of the art world.

The technical terms, *tones*, *tints*, and *hues*, are not always defined correctly. *Tone* relates to the light, medium, and deep colored parts of a picture, and may be properly applied to a work in monochrome or color, though usage has generally limited it to color. It is a term borrowed from music, and applied to color, denotes its lighter or darker conditions. *Graduated Tone* is illustrated in example 8, pl. 1. When color is graduated by tints or degrees from the lightest to the deepest, as in example 9, pl. 1, it is called a *scale of color*. Chevreul recommends that a scale, to show a color well, should have from eighteen to thirty divisions; its *normal color* or *full color* would be midway between its two extremes. A less number is given in our illustration, as sufficient to define the term.

Tint is a term applied to a flat, ungraduated body of color.

Hue is applied to a color, when modified by the slight addition of another. Thus, if a pure blue receives a minute addition of red, it still remains blue, but its *hue* is changed. A neutral gray, having added to it a small quantity of a primary or secondary has the *hue* of such added color. The tertiaries have been by some writers termed hues; as olive hue (bluish), citrine hue (yellowish),

and russet hue (reddish). Example number 10, pl. 1, gives near its ends examples of reddish or maroon and bluish hues.

Shade is a term improperly applied to color as such; thus, to say a *shade* of blue to denote its depth is less desirable than to use the word *tone*, as the word *shade* implies obscurity, whereas *deep tone* would signify intensity or saturation of color, and would be consistent with brightness.

Simple color is a term usually applied to the primaries.

Pure color, *pure complex color* and *binary color* are terms applied to the secondaries or any part of their several scales. The term *pure color*, is also sometimes employed to denote the primaries or the use of a pigment unmixed with other colors.

Broken color signifies a primary or secondary, or any part of their scales, when broken by the addition of a small quantity of the complementary. Broken color can be formed by compounds, by superimposing color, or by a hatching movement with the brush.

Positive color generally signifies the three classes, primary, secondary, and tertiary, but, to be exact in definition, there can be no *positive* associated color; all color is *relative*; that is, it changes by the influence of neighboring colors. For example, black placed by the side of red lowers its tone, white strengthens it, gray renders it more brilliant.

Pigment is the material as produced by the color maker; *color*, the result as the pigment is used.

Water colors are applied in *washes*, *blotting*, and by *glazing*, *hatching*, *stippling*, *dragging*, and *scumbling*. The definitions of these methods are given in the body of the work, in the parts relating to practice with color, and texture in foregrounds.

Harmonies of color are arranged in six general classes by Chevreul, and are comprised in two groups. In all of these harmonies the element of contrast is present more or less; yet the distinctions observed in the propositions below have been generally accepted. First, HARMONIES OF ANALOGY: (*a*) the *harmony of scale*,—see example 9, pl. 1; (*b*) *harmony of hue*,—see example 10, pl. 1; (*c*) the *harmony of a dominant colored light*, as when colors arranged by the law of contrast (complementaries), are seen by an artificial light of a color analogous to one of the colors exhibited, bringing one of the colors in excess and modifying the others. Second, HARMONIES OF CONTRAST: (*a*) *harmony of contrast of scale*,—example, the two ends of scale number 9, pl. 1; (*b*) the *harmony of contrast of hues*, being a simultaneous view of tones or tints in neighboring scales, as a scale of red and a scale of maroon; (*c*) the *harmony of contrast of colors*, being a simultaneous view of colors arranged according to the law of complementary color.

WATER COLOR PAINTING.

MATERIALS AND THEIR USES.

THE materials for water color painting may be classed in five general divisions: the PENCIL OR PEN, for outlines,—BRUSHES,—DRAWING BOARD, PALETTE, ETC.,—PAPER and COLORS.

With many professional artists the pen, used with pale neutral color, is a favorite instrument for the finished outline, supplementing the first studies in pencil; but with amateurs and students the pencil is best, for it admits more readily of minute changes as the work proceeds. The best lead pencils for artists' use are of German manufacture, and bear respectively the brands of A. W. Faber, and Grossberger & Kurz. Faber's Siberian Polygrades, in hexagon form, and in movable leads for tubular screw pointed handles, rank very high, and the corresponding Siberian brand "Cornelius" of Grossberger & Kurz, furnish the artist with every requirement for pencils. American pencil manufacturers are, however, advancing in the excellence of their products, and Dixon's best brand is a very satisfactory article. The old English Cumberland leads are superior for landscape sketching, but they lack the tenacity of point possessed by the German pencils. Hexagon forms are generally adopted by manufacturers for artists' pencils,—

and the leads are usually made of about ten degrees of hardness, being stamped by letters, one H to four and six H; and one B to five or six B, for softer grades. The kind used for school and commercial purposes, is generally of round form and a somewhat inferior article, being marked by numerals 1 to 4. Pencils of tubular form, screw pointed, with movable leads, are the most convenient; and as the whole length of the lead can be used, are cheaper than those pointed with a knife. For ordinary sketching, pencils coming in sets of about four grades, and of German brands, are usually selected, and for outlines, those marked H to H H H or, if designated by numerals, Nos. 2, 3 and 4 are best. The harder grades may be sharply pointed for finished detail, or reserved with blunt points, for slight indications of shade, while the softer leads are kept for broad and brilliant touches in the foreground. When required to be sharpened with the knife, pencils should have only the wood cut away thus:

leaving the lead untouched, which may be brought to a very fine point by a flat file or fine emery paper. The lead is not broken by this method and the point is much more delicate and firm, than by the old cutting process. A pencil carefully pointed, induces a neat habit of working, and minute variations in the outline are more likely to be secured.

The use of dividers for measurements, or rulers for straight lines should be avoided, except when required in architectural or mechanical subjects, and for the same reason,—that the

eye may be disciplined; tracing a copy should never be allowed.

Next to the lead pencil, India ink stands in the order of merit as a ready and desirable material for sketching with the pen, in diluted color. Aside from its own intrinsic value as a medium in washes and pen drawing, its use in outline with a fine brush, is an excellent prelude to general practice with color. The quality of India ink is a matter of prime importance; to test it, try the cake, touched in water, by rubing it on the tile. It should dry with an even, glossy surface; if it rubs off with a thick opaque appearance, and dries without lustre, it is worthless for fine drawings.

BRUSHES FOR WATER COLORS.

The best brushes are made from the black and red sable, and are generally preferred of large size, as they admit of a very fine point, and, being capable of carrying more or less color according to the wants of the artist, give an advantage in producing clear tints. The hairs for these brushes are carefully selected, a small number at a time, and placed around a few long central ones, with reference to a carefully formed point. This slow process makes the finished article, when large, very expensive; but it is good economy to select the best qualities. Formerly the best grades of brushes were imported; but the American brands of F. W. Devoe & Co.'s genuine Black and Red Sable, both for water and oil painting, have for several years been placed on the market and are in good demand. Under the name of "Siberian," a useful brush is furnished at a moderate price, and answers for

flower painting and general amateur practice; it is a very fine brush for general washes. Russian sable,—"Siberian Fitch,"—in large and small sizes, is cheaper than black or red sable, and answers quite well for general work in skies and large washes. Red sable hair has the firm elastic quality that especially fits it for marking purposes and all uses in the picture where texture is wanted, or opaque color is used. The larger sizes are held in such esteem by all professionals, that they are represented in every complete outfit. For opaque color, very soft bristle brushes are sometimes used; the pigment being in pasty form and mixed, with the palette knife, like oil colors.

The camel hair brush is the ordinary kind, in general use in classes, and is the softest in texture of the whole range of brushes. Its want of elasticity proves the greatest objection to its use, but even this quality fits it especially to some purposes. The larger kinds when made of good material, prove sufficiently elastic for general washes,—and all grades are useful as blenders, and for dampening paper. Being made of all sizes in both quill and metallic ferrules their use is general; and while their cheapness brings them within the means of all, they are not necessarily an inferior article, for the best grades rank high in the esteem of the artist.

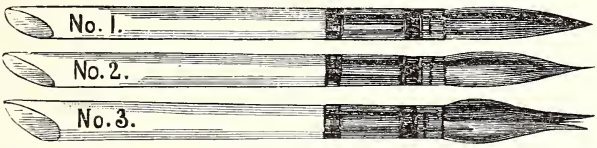
Formerly, all brushes for water color were made with quills, but now those so made are employed principally for miniature and photographic painting. The sizes of ordinary brushes for water color, in quill or metallic ferrules are described by dealers as follows—beginning with the largest:

Swan, Goose, Duck and Crow quill. The Eagle brush, the largest quill-brush used, is about $\frac{3}{8}$ of an inch diameter at the lower end of the quill, and the smallest, Crow quill, about $\frac{1}{16}$ of an inch. The Swan brushes comprise about seven sizes and are known by numbers, from one, the largest, to seven, the smallest, the latter being, say $\frac{3}{16}$ diameter, and the former nearly $\frac{5}{16}$. The brushes in metallic ferrules are numbered differently from the Swan quills, being known as 0 or 1, the smallest, and increasing in numbers to the largest. The Goose quills number two sizes, common and extra. It will be thus understood, that the quill brushes number eleven sizes, but when the hair is enclosed in metallic ferrules, the numbers for round brushes are extended three or four sizes larger, and one or two sizes smaller, making about fifteen in all. The number of sizes in flat brushes is somewhat less.

The distinction between HAIR PENCILS, and BRUSHES, is not generally known by amateurs; in the trade, brushes in quills without handles are known as hair pencils; others are catalogued as brushes.

Care should be taken not to leave brushes lying in water, or to dry, charged with color. A red sable brush of medium size should be kept for white, and no other brush used for the purpose,—and it is also well to use old worn brushes for rough washes, and opaque color, sparing the new and delicately pointed, for detail work. It is also a good plan to have a few brushes for use with delicate yellows and reds; no other colors are so easily defiled, and a perfectly clean brush and pure water are necessary to realize the full purity of their

tints. When on sketching tours, brushes may be safely carried by placing two together, their points reversed, and held by an elastic. The delicate point of a costly brush may be soon destroyed by carelessness.



When purchasing a brush, observe if, when wet, it comes to a point shaped like No. 1 in the engraving. If the outline of the hairs has a concave form like No. 2, it will not work as well as No. 1, which has a gentle convex shape. Brushes formed of elastic and somewhat stiff hair, like red sable, will separate in working if the hairs are like No. 3, inserted too deep in the ferrule. This fault can however be remedied, if the socket is a quill, by cutting off a minute portion of the latter, leaving more length to the working portion. Camel-hair brushes should have the hairs project from the ferrule a less distance than sables.

To secure purity in color, the water cup should be large and the contents often renewed, especially when working in delicate washes and opaque color. Care should also be had that the water is as near as possible of the character of rain water, and of summer temperature, for the best colors curdle or "draw," in "hard" or cold water. The palette and paper should also be of about the same temperature as recommended for the water, for it is impossible to get smooth flowing color, with these materials in a cold condition.

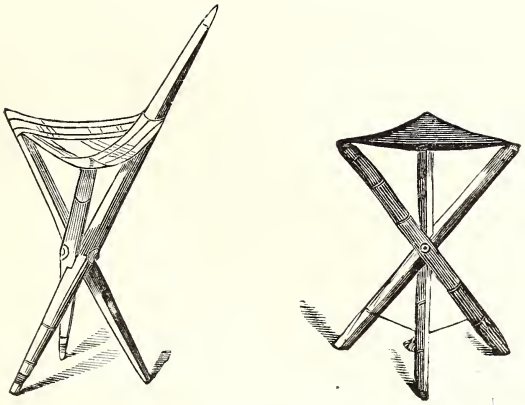
DRAWING BOARDS, PALETTES, ETC.

The use of drawing boards for beginners, has of late been largely superseded by drawing books and solid sketching blocks; but they are indispensable for large drawings or where the paper is dampened to get the requisite surface. They should be made generally of three sizes; the largest 30 x 22 inches to receive the "imperial" drawing papers, and the two lesser sizes, to take half, and quarter sheets. The best material for the board is well seasoned pine, and the ends may have clamps or cleats to prevent splitting or warping. The thickness of the material should be in proportion to the size of the board. Boards used for out-door sketching may be varnished with shellac, to prevent warping.

The manner of affixing the paper to the boards is described in the article on Paper.

Easels, are not usually employed for water color painting, —except for large works. The wash or flow of color generally requires the paper to be held at the angle of a common writing desk, and for this reason, table easels are sometimes used, as they can be adjusted at any angle required. They are made of heights, varying from 18 to 24 inches.

The folding easel and seat combined, is shown in the illustration. This form is valuable for open air sketching, as the hands are left free, for the palette and brushes. The knapsack easel is like the foregoing with the addition of a waterproof covering, and straps. Forms of sketching stools, and sketching umbrella are also given.



SKETCHING STOOLS.

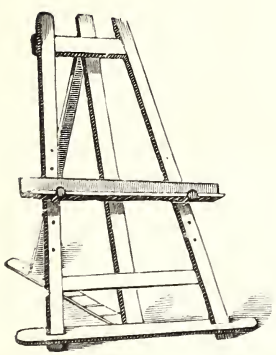


TABLE EASEL.

FOLDING EASEL
AND SEAT COMBINED.

Palettes for water colors are made of porcelain, or of gutta percha with enameled surface. Tiles, with slants and wells, are more useful where large washes are to be laid. A convenient form of tile, where a drawing is to be made in monochrome, is the glass covered well-tile ; by wetting the cover and applying it, the liquid color is preserved from evaporation.

PAPER.

The selection of a good and suitable paper for water color, is of the utmost importance, as to its material, its chemical character, and the granulation of its surface; for it has been found that color in this medium is unfavorably affected in permanency, if the paper is not made of suitable stock and all deleterious chemicals avoided. Pure linen paper bleached without chemicals, is expensive, but all paintings possessing artistic value should be made on it both for permanency of color, and facility of working.

The degree of absorbency of surface, is a quality, about which, artists differ in their choice, but the wants of all are met; and those who prefer absorbent paper find it in the different grades of Harding's; while those who prefer a surface that "bears out" the color, are partial to the various kinds of Whatman's "Turkey Mills" papers. The amount of granulation of surface is often a matter of fancy, but as a rule it may be said that for small subjects, and flower painting, a tolerably smooth surface gives the best results,—and if opaque color be used, the surface should "bear out" the color well. Large pictures, especially landscapes, will admit of a paper with coarser granulation. The texture of surface in papers for water colors, is expressed by the letters H. P (hot pressed) for smooth; N. for medium, and R. for rough. By holding the sheet before a strong light, the water mark reading correctly from left to right will designate the true or working surface. Whatman's and Harding's extra heavy, are the best papers made for water colors. The most desirable

sheets of the former brand are known as "perfect," so distinguishing them from others of that manufacture having stains or imperfections of surface.

A good surface for water color is found in the celebrated Reynolds' super London boards, smooth; and in Turnbull's rough London board. The best quality of these boards is made by hand, and is pure linen; the second quality, Bristol board, is machine made, and has more gloss, or is more highly calendered than the former. The last mentioned is unsuited for color. All of these drawing boards are made by pasting sheets of paper together, and are distinguished by the number of sheets combined. Thus, four sheets thick, is the heaviest, and two sheets the lightest. All qualities work much better for water colors if they are first dampened with a very little pure water and allowed to dry. Too much moisture will cause the sheets of which they are composed to separate or blister; therefore the brush by which they are dampened should have as little water as will answer the purpose. The thickest and best quality of paper when used for a small water color sketch, need not be stretched, but only tacked at the corners and slightly dampened; and the varieties of London and Bristol boards need only to be secured at the corners, for immediate use.

The trifling adhesion at the edges, of the solid sketching blocks shows how slight is the tendency of paper to curl under the ordinary washing of the brush;—it is the excessive or unequal moistening that is objectionable. The London boards, and indeed all paper intended to be used without stretching, should never be rolled, but kept flat, as it is pur-

chased. For large works, or in using thin or ordinary paper, the sheet should be stretched, using a wide brush, and pure water applied equally to each side; or the sheet may be rolled in damp cloth until it is limp. While the paper is in the moist condition, care must be exercised to prevent any chafing or injury of the surface, as this would entirely spoil it for receiving color in washes. When sufficiently damp, but not weakened by too long soaking, apply warm glue, quickly, half an inch in width, around the edges, and press it without rubbing, to the board, taking care to work *opposite* sides in succession. By this method, the sheet will not be liable to wrinkle at the corners when dry. Lay the board horizontally while the paper is drying, and do not place it in a high temperature while the sheet is moist, as too great heat will rupture the paper, or tear the glued edge from the board. It is absolutely necessary to have the paper dried very taut and flat to get even washes in skies and distances; and in valuable paintings, the paper should never be taken from the board, but framed permanently with it. The picture should not be allowed to touch the glass in the frame, but be protected by a mat, at least one-eighth of an inch thick and be hermetically sealed to protect it from dust and foul air. In using the ordinary clamp drawing board, no glue is needed, and much time is saved; the paper being dampened as for the glued method, the manner of using the clamps for stretching, will be readily observed. Paper wet and laid upon plate glass preserves its dampness for a long time, and for washing skies or "blotting in" general effects, this device will sometimes be found useful in small sketches.

For the use of the lead pencil and for general sketching purposes, no paper is found to surpass the French and German pencil and crayon papers. They are without gloss, but have a fine granulated surface that takes the pencil or crayon admirably, while they are sufficiently firm to allow of erasure with rubber, bread crumbs, or the knife, without injury to the drawings. They are made in great variety of thickness, quality and tint, the favorite colors being gray and buff. A pencil-drawing on these tints, with the high lights laid on with Chinese white, has a very pleasing effect, and all sketch books should have these tinted papers interspersed with the white sheets. The French Torchon paper, rough surface, is a cheaper article than Whatman's, and answers admirably for transparent coloring, where much granulation is required; but it will not bear the hard usage of the tougher "Turkey Mills" brand. The "Eggshell" Cartoon, (tinted and white,) and other German Cartoon (white,) papers, are sent to the market in rolls, and sold by the yard. The great width of this paper,—from thirty-six to fifty-eight inches,—allows sheets for very large works. It is sold at about one-third the price of the best English paper, and answers well for mechanical and architectural drawings, and is an admirable paper for learners in their early efforts. When backed with muslin, it is very durable.

The English tinted crayon paper is a very highly valued variety for pencil sketches, or water color drawing; its firm and substantial character, giving it a value for large drawings as well as for all general uses. The more delicate tints of colored board, sometimes called French Bristol, give a unique

and pleasing effect when used for water colors,—the high lights being given with Chinese white. When used for flower or figure painting, the surface should be quite smooth and the texture of prominent foreground parts, can be given effectively with opaque color.

The foregoing papers, with many of the more ordinary grades, are now combined in solid sketching blocks, varying from 5 or 6 inches square, to 14 by 20 inches. Some of the latter are made from the best Whatman, Harding, and imitation Creswick papers, and meet all the wants of professional artists and amateurs. The sizes, "imperial" and "royal" of Whatman's pure linen papers, are made of different weights, and some are so heavy as to justify the term "board" as applied to them, and need no stretching, or even a drawing board, for small sized sketches.

COLORS.

The improvement in the quality of water pigments, the large increase in their number, and the varied methods of their preparation, have greatly stimulated Water Color art in the past thirty years. We now have these colors in cakes, the moist color in porcelain pans, and the pasty color in tubes and bottles. Added to these, there has lately been placed on the market the "slow-drying" colors in tubes, for

which is claimed an evaporation so slow as to admit of prolonged handling. These various methods of preparation have each their peculiar merits and uses.

For school purposes and amateur use, the cake form is desirable, as it cannot be injured by drying of the cake, and pure color can be obtained at all times. The disadvantages are, the time spent in rubbing large quantities of color, and the tendency of some of the cakes to crack off minute particles, that float in the wash and interfere with its evenness. This last trouble may, however, be partially overcome, by placing the water on the palette with the end of the finger, rather than dipping the cake directly in the water, as the last method tends to excessive wetting of the pigment.

The moist color in pans, is an admirable form for outdoor sketching, as the color is available in any quantity at the touch of the brush, and there is no losing or displacement of cakes. The japanned tin box, with pans in divisions, is held on the thumb as a palette. The principal objection to this form, is that in mixing complex tints, the pigment gets defiled with the brush, and if pure color is wanted, a troublesome and wasteful process of washing off the surface of the pan is necessary. Moreover, it is thought by some artists that the kind of vehicle necessary to keep the colors moist, interferes with their even-washing qualities, for skies and extreme distances. Cake colors are undoubtedly best for this last purpose, but the moist form is excellent for every other part of the picture, and they have the same advantages as the cake color in keeping well—not cracking or molding. When pan colors are set aside after using, it

is well to brush the pigments with pure water, and close the box securely.

The pasty form of color in tubes and bottles, is favored by professional artists, especially for large works, as the color can be had at once in any amount, and of any desired tenuity. The particular disadvantage of the tube form, is the tendency of a few of the pigments—the vegetable colors especially—to harden in the tubes to such an extent, that if kept two or three years in a dry or warm place, they lose their plastic character, and cannot be expelled. But this, though a serious objection, does not spoil the contents as, by removal of part of the tube, the color can be rubbed off like cake color. This troublesome fault of color drying in the tubes can, moreover, be obviated to a great extent by keeping the color box in a moist, cool place, when not in use. Care must be taken to keep all pasty or moist color from extreme cold, as severe freezing is injurious, and may break the tubes or bottles.

Tubes should be handled carefully, and when color is wanted, the pressure should be applied at the extreme end of the tube, to obtain the amount of color wanted for immediate use. By this course, the tubes will be kept round and smooth. The screw should not be allowed to be gummed with color, and if the cap cannot be easily started, pincers applied will usually move it. If, however, this should fail, insert the screw end in warm water for a few minutes, when the cap will easily move. Violent turning of the screw will very likely rupture the tube. Tube colors are used by some artists to fill the porcelain pans, when exhausted of color.

The color in bottles, with glass stoppers, is a favorite form with water colorists in Germany, the color being taken out on the point of a knife. A minute mildew or mold is, however, liable to be formed on the surface of the color, if it is kept in a warm place, and the glass stoppers will not prove entirely air tight, unless a small quantity of syrup or glycerine is kept on them. Like the tube color, however, this form is available if the pigment should become hard; for, the bottle broken, the mass can be used by rubbing it in the same way as the cakes.

The general qualities of colors will be found given in detail in the numbered list, on the following pages; but it must be understood that when their fixed or fugitive character and other peculiarities are mentioned, it is with some reservations. Thus a color may be fugitive, like Italian Pink, when exposed to light on a wall picture, but it may be pronounced quite permanent employed in album or portfolio drawings. The author has seen examples of Italian Pink, Gallstone, Gamboge and Indian Yellow,—pure washes in a book,—that were laid in the year 1827, and yet showed no apparent diminution of brilliancy. The same was true of Crimson Lake and Carmine. Cobalt, under the same conditions, had turned quite green. Prussian Blue when not combined with colors that destroy it—as Chrome Yellow—may be pronounced quite permanent, when produced by reliable colormakers. Examples of this blue, washed in the year 1814, and subjected to rough usage, show no loss of depth or brightness of hue.

Again, the working qualities of the same color are not equal, in pigments produced by different colormen. The

author has tested the colors most troublesome in washes, and found that in the pigments of English, German and French colormakers there was a decided variation. The brilliancy of colors, also varies with different makers; some keeping the pigment to its normal, pure standard, while others secure an artificial brightness by admixtures that deteriorate the article in its keeping or working qualities.

The chemical character of colors should be well understood, for the uncleanly habit of forming the point of the brush with the lips, is *very dangerous.* A piece of moist paper is a good surface on which to shape the point of the brush, and regulate the amount of water and color. None of the water colors requiring caution in their use are dangerous if not taken into the system through scratches or wounds on the skin, or by the mouth. Orange Orpiment and King's Yellow, (or Yellow Orpiment), are derived from a poisonous base, and some of the most brilliant greens are a combination of arsenic and copper. Gamboge, Raw Sienna and the ochres are safe yellows for the use of children; and Hooker's Green, and the greens formed by Indigo with any of the latter yellows, are entirely safe for young people. Vermilions and whites should be used with care. In selecting boxes of colors for children, all of the dangerous varieties should be excluded.

The following characteristics of colors are of great importance, and should be studied by every amateur and professional: Their *opacity or transparency—permanent or fugitive qualities—advancing or retiring character—affinity or antipathy in mixtures,* and the quality suggesting *coolness or warmth.* A thorough knowledge of these qualities will

spare the young artist many failures and disappointments; and to guard against these, the principal colors used in the water medium will be mentioned, with their peculiar characteristics.

YELLOWS.

1. Lemon Yellow.—A semi-transparent color, good in combinations for retiring greens in the middle distance of a landscape, where it is often mixed with Emerald Green. It is good as a glazing color over greens in the middle distance, and is sometimes employed to subdue the brilliancy of Gamboge. It is also useful in pure color for some varieties of flowers, as evening primrose, etc. Permanent, and washes well.

2. Naples Yellow.—Useful in stones, sand and gravel banks of foregrounds, and in architectural subjects. Has too much opacity for general usefulness in mixtures, to which it imparts a turbid, unpleasant character. For water color, it is now made with a zinc instead of a lead base, and is therefore permanent. Its use for lights on foliage is well replaced by deep Cadmium and white, which constitute an excellent imitation of it.

3. Aureolin.—A beautiful, pure and desirable yellow, transparent, permanent, and working kindly in mixtures. It approaches more nearly the primary yellow of the solar spectrum than any other color. It has not great power, but it possesses delicacy and clearness in all greens, and used in minute quantity in grays, gives them a rich tone. In pale

washes, it can be used in skies for sunsets, etc. Some artists assert that the metal of tubes injures the purity of this color, and that its greatest brilliancy is found only when in pans or cakes.

4. Gamboge.—A brilliant transparent yellow, of vegetable origin, and forming clear greens for foregrounds, with Indigo and Antwerp Blue. With Sepia, Payne's Gray, or Blue-black, it produces sober browns or quiet greens. Used in strength or as an underlying color, it is reliable for permanency. Its gummy nature serves to hold other colors compounded with it.

5. Yellow Lake.—A light, transparent and somewhat advancing yellow; but cooler and less powerful than the three last numbers. Not permanent.

6. Indian Yellow.—This splendid and invaluable yellow is a contribution to the arts from India. With all the blues, it forms useful greens, but being advancing in its character should be employed principally in foregrounds. With Chinese White, it forms beautiful golden opaque tints for flower painting and drapery. Its working qualities leave nothing to be desired. Indian Yellow should not be mixed with the colors from cochineal. Mars Yellow and Aureolin combined, give an excellent and *durable* substitute for Indian Yellow, the latter while resisting sunlight, being somewhat fugitive under conditions of foul air.

7. Raw Sienna, or Terra-di-Siena.—More transparent than its neighboring colors, the ochres. Much employed in

landscape in light washes for middle distances, but in full strength for foregrounds. Combines harmoniously with all transparent blues, and with the addition of a trace of Bistre, is admirable for the clear yellowish greens of agitated water in marine subjects.

8. King's Yellow, (Yellow Orpiment.)—A rich opaque yellow, sometimes used in connection with dark ochres for gold ornaments, but not useful in landscapes; poisonous, being made from arsenic, and should be used with caution. Orange Orpiment has the same materials as King's Yellow, the deeper shade being caused by more arsenic in its composition.

9. Chrome Yellow.—The brilliant chromes are prepared in three grades,—pale, deep, and orange. Chrome Yellow is not considered permanent, and from its harsh, rank character, is seldom used, except with strong body in small quantities in the most advanced parts. It destroys Prussian and Antwerp blues. The pale grade is more transparent than the deeper varieties, and less fixed in character. Yellow and orange chromates of lead withstand sunlight, but are acted on by some pigments, and change by time or the influence of foul air.

10. Deep Chrome.—This deep grade of Chrome Yellow is esteemed more permanent than its paler companion color, and if glazed with Gamboge is quite reliable.

11. Yellow Ochre.—Is perhaps the most useful of the ochres, being, like all of its class, permanent, washing well, and combining kindly with other colors. Its slight

opacity makes it valuable with Cobalt for distant greens in landscape or backgrounds, while in portrait or figure painting it stands among the most favored pigments. When the ochres are used to modify cool colors, they are best used as a glaze, the underlying color being perfectly dry.

12. Gold Ochre.—This is a transparent and valuable variety for general mixtures,—quite similar to Yellow Ochre, but rather more brilliant. Its general qualities are the same as the preceding color. *Italian Ochre* is similar in qualities, to Gold Ochre, but rather more transparent.

13. Roman Ochre.—A deeper color than Yellow Ochre, more transparent, and forming more decided tints in combinations. Used with Indigo or Antwerp Blue, it gives desirable greens for middle distances and foregrounds. Permanent like all the ochres.

14. Brown Ochre.—A deep toned ochre, very useful for a sandy beach, or hills in marine views, or gravelly banks.

15. Cadmium Yellow, (Sulphide of Cadmium.)—A splendid pigment, nearly transparent. In light washes it is valuable for the glowing tints of sunsets, but when applied in power it has too much of an advancing quality to be used for distances. It washes and works well, is permanent in its deeper tones, but does not affiliate kindly with some colors in mixtures. It is prepared in three grades—lemon, pale and orange. Lemon Cadmium is not reliable for stability.

16. Mars Yellow.—A French artificial ochre, of warm, brilliant character, works well and is permanent. Mars Yellow, Mars Orange, and Mars Brown, having a base of iron, cannot

safely be compounded with the cochineal colors, the greens and blues from copper, or with any colors having a lead base.

17. Gold Yellow.—This is a German and French color of rather richer hue than the English chrome, and having much body can be made useful when used pure, rather than in mixtures. It is valuable in flower painting, to give the brilliant stamens of some varieties.

18. Italian Pink.—A rich, transparent yellow lake, very useful in bright and gorgeous autumnal foliage tints,—combines kindly with blues, Sepia or Blue-black, affording with the latter, olive greens, and with the former, various rich foliage tints. Its character for permanency is not reliable, except when used in album or portfolio sketches.

19. Gallstone.—A yellow of animal origin, very rich, deep and gorgeous in its full tones, transparent and advancing in character. Employed sometimes in flower painting, but its fugitive quality is so marked, that it is but little used in works exposed to much sunlight.

20. Japan Yellow.—Though this German color is known on the trade catalogues as a yellow, it approaches a red. It has lately been placed on the market, and its character for permanency is not known. Its working qualities are good, and it combines kindly in mixtures, but its intense richness will probably make it more useful in illumination and decorative painting than in pictorial art. It is evidently identical with the English moist color, Chinese Orange, which is a coal-tar pigment.

21. Rose Rubiate.—A liquid color, known by some artists as extract of Madder Carmine, or liquid Madder Lake. This is not a very common preparation of the beautiful and permanent madder colors, but it is held in high esteem by some, from its convenient form for large washes. In its working and combining qualities, it will be seen to be liquid Rose Madder, though less bright in hue.

22. Rose Madder.—The brightest and purest of the beautiful madders and more widely known than other varieties. It washes admirably, and can be used pure in sunset skies, or in combinations of purples for extreme distances. Used with Yellow Ochre, it is valuable to reduce the crudeness of Cobalt for sky washes. It is also employed, combined with Yellow Ochre, for flesh tints, and with this color and Cobalt, forms good shades and shadows for flesh. Having less power than the cochineal colors, it yet far excels them in purity of hue in the paler washes; and though useful applied pure, its great value is in mixtures.

23. Pink Madder.—This color, essentially the same as Rose Madder, or Madder Lake, though a trifle deeper in hue, is yet known in trade catalogues and is manufactured by colormakers, as a distinct variety. We give it, therefore, a separate mention, as some artists are very partial to it, and will know it by no other name. *Madder Lake* is the term used for the color by German colormakers.

24. Madder Carmine, or Field's Carmine, is the most intense or powerful form in which madder is used in

water color, and in its deepest tones rivals its cochineal relative; but in softness, permanency and general usefulness, far surpasses it. There is no greater favorite for the water color palette than this superb color, used pure or in combinations, though in brightness it is inferior to Rose Madder. Purple Madder and Brown Madder will be found classed respectively among the purple and brown pigments.

25. Rubens' Madder has all the good qualities of the other preparations of the madder root, as sunlight, foul air, or time have no effect upon it. It is a peculiarity of all *genuine* madder colors that time seems to increase the beauty of their hues,—but these pigments, like everything else intrinsically valuable, suffer in their reputation from adulterations or imitations. Rubens' Madder is a bright russet, of an orange cast, very useful in red drapery and autumn foliage, and if deepened by Vandyke Brown, affords an excellent color for shade in foregrounds. It is also of service in the coloring of cattle, bay horses, &c.

26. Carmine.—The brightest and most attractive of the beautiful cochineal colors. Not a favorite with professional artists on account of its want of permanency, yet it is quite popular with amateurs in flower painting. It possesses great power as a marking or defining color on dark tree trunks, fissures in stones, &c., when used in full strength. In its light washes it is quite fugitive, except the painting be kept from the light, in a book or portfolio, but its heavy, dark tones stand well under favorable circumstances. Brilliant scarlets for flowers can be made by an underlying tint of

bright yellow, glazed with Carmine, and it can be used to some extent in strong purples and advancing grey tints. This color is put upon the market in bottles in liquid form, but some artists purchase it in a dry state, wetting it to a pasty condition and adding an appropriate vehicle.

27. Crimson Lake is the most generally useful of the colors from cochineal, as it is much employed in combination grays for middle distances and foregrounds. With Sepia it forms beautiful tints for many purposes, and these two colors, with Indigo or any of the transparent blues, constitute pure grays. It is more purple in hue than Carmine, less advancing, and also less permanent when used pure. Its working and combining qualities are of the first order.

28. Scarlet Lake.—Rather more opaque than the last, and of a scarlet character, but otherwise having the same qualities.

29. Indian Lake, or Lac Lake.—A rich, transparent, but rather dull color, obtained from the resinous *lac* or *lacca*, found in the East Indies. More stable than the cochineal lakes, but inferior to madder colors, its principal use is in shadows, where it can be used in strong body. It is well imitated by the superior mixture of Madder Carmine and Madder Brown.

30. Purple Lake.—The strongest and most durable of the cochineal lakes; is useful in mixtures for purples and grays. It is in demand as a marking color for texture of surface in masses of shaded foreground, and for this purpose is useful, but in its light washes it is quite unstable.

31. Burnt Lake.—A rich toned color from cochineal, made deep and powerful by the charring process employed by the colormakers. It is thought to be less permanent than its related color, Burnt Carmine.

32. Burnt Carmine.—An intense, deep and strong purplish maroon, useful in combinations for foreground shadows, and for markings in foreground weeds and trunks of trees. Its advancing character will not allow of its being employed except in the immediate front. A small quantity added to India Ink, gives the latter great intensity for the pen drawings used in the photo-process of engraving.

33. Dragon's Blood.—Not a permanent color, when used pure, but useful for first washes in red drapery, and sometimes employed in deepening the red lake colors; also used as a shadow tint in red flowers. Its transparency makes it valuable, but it must be generally employed as an underlying color. Its origin is vegetable, it being made from a shrub found in India.

34. Naples Red.—A dull and rather pale red, found in the German color lists; of a more sober cast than Light Red, and more retiring than the latter color. Used pure as a brick color or in pottery its hue is very satisfactory. Its working qualities are about the same as those of Venetian and Light Red.

35. Light Red.—An indispensable color both for landscapes and figure painting, as in skies and distances it forms with Cobalt or French Blue, beautiful retiring grays; while with Blue-black or Brown-pink it forms good advancing

tones for foregrounds. Washes well, is permanent, and combines kindly with other pigments; while, used pure, it is employed in red tiles, brick pavements, earthernware, &c.

Red Ochre, found in some collections, is very similar to Light Red; that of Winsor & Newton being more of a yellow cast than the latter color, and rather more transparent. It is not represented in our lists, from being commercially not obtainable in this country. Brown Red is another color analogous to Light Red, deeper and with more body, but not usually found in our color stores, though common with French artists.

36. Venetian Red.—Is prepared from Sulphate of Iron, and having no earthy base cannot be properly classed with the ochres. It is brighter and more transparent than Light Red, and works kindly in mixtures, forming purplish grays with Cobalt and Indigo; and deepened with black gives useful hues. It is serviceable for flesh tints, red drapery in foreground figures, and in brick tiles, earthenware, &c. It is best deepened by the madder lakes.

37. Indian Red.—The best standard of this color, having a lakey tone, and quite free from grit, is of great use in combination with blues for foreground grays, where its advancing qualities give it great power. It is also desirable in foreground figures, bay horses, cattle, &c., and in autumnal foreground foliage and weeds. It should not be used with Indigo. It is much employed for shadows and strong markings in photographic water color portraits. Washes well, and is permanent under the most severe tests.

38. Persian Red, or deep Indian Red.—A fine red, from the German colormakers, of a character similar to the last mentioned, but deeper and cooler, as now furnished, and forming stronger combinations with other colors. Quite useful in deepening and subduing shaded green in parts of foregrounds.

39. Red Chalk.—An Iron Oxide of a more yellowish hue than Venetian or Light Red; occasionally used for bricks, red sandstones, &c., in architectural subjects. It can also be used with good effect in autumnal foliage for advancing parts.

40. Red Lead, (Deutoxide of Lead.)—A fine scarlet of an orange cast, more intense than orange chrome,—semi-opaque, and quite permanent under favorable conditions.

Red Lead is discarded by many artists, and denounced as a gaudy, meretricious pigment, wholly unfit for pictorial art, and tolerated only in illumination. We venture the assertion that in skilled hands this much abused color has its place, not only in its pure tints, but as an agent in warming and strengthening the ochres and browns. When sealed from impure air, its color is quite stable, in ordinary light. Its dilute washes have a mellow softness that is quite charming, judiciously used in foregrounds, while in deeper tones, its use in minute quantity in focusing the ochres, is analagous to the use of Emerald Green, in foliage greens. Its drying qualities are so marked that it is difficult to keep it plastic in tubes, and it will not rub off freely from cakes. Prepared in pots, as for illumination, it works more freely. It should not be compounded with colors having a lead

base. Poisonous, and should not be placed among colors used by children.

41. Orange Vermilion.—This color, as now produced, is one of the most useful and popular pigments of the modern palette. Its working and combining qualities are superior to vermilion, and it can to advantage be used pure for brilliant touches in connection with deep foreground grays. Permanent, like all varieties of genuine vermilion.

42. Scarlet Vermilion.—Possesses the same general characteristics of its parent color, Vermilion, but it is more transparent, washes better in its light tones, and is more generally useful in landscape.

43. Vermilion, (Sulphuret of Mercury.)—A bright and permanent color, but its opacity and heavy qualities are, in the water medium, a bar to its use in complex tints. The best grades of it are, however, very effective in combinations, if used immediately on mixing, for small washes in foregrounds. In small quantities of pure color, it is very charming in foregrounds when brought into contact with warm or greenish grays. Used to deepen the ochres it is very valuable. If Vermilion is glazed with red, the glazing should be madder rather than cochineal color, and if any of the vermilions need enrichment, the madder colors should be used rather than the lakes of cochineal.

44. Pure Scarlet is an Iodide of Mercury, and is the most dazzling and brilliant, and at the same time the most treacherous and fugitive of modern pigments. It can be

used to advantage principally in portfolio or album sketches of flowers, where light is excluded. The color, even in cake form, should be kept covered from the light, and never brought in contact with metal in any manner. A good and durable substitute for Pure Scarlet is Cadmium Yellow or Deep Cadmium glazed with Rose Madder.

ORANGE COLORS.

45. Cadmium Orange.—A splendid and gorgeous color of great depth, yet totally devoid of the rank and crude character that constitutes the greatest bar to the general use of the orange pigments of the old water color school. This color was introduced to the art world about 1862, and at once obtained a favor which it has since retained. Permanent and useful, both pure and in mixtures, its quality shows to advantage in thin washes or in deep markings. Its power and advancing qualities restrict its use to prominent foreground parts of the picture.

46. Orange Chrome is a color of great brilliancy and power, and more reliable for permanency than its related yellows. Its use has, however, been restricted since the introduction of the more reliable Cadmium Orange; yet if a rich orange of an ochreous cast is wanted, it will be found useful. All of the chromes have of late been greatly improved by the colormen. If glazed with Gamboge or Rose Madder, Orange Chrome can be made useful for brilliant touches in flowers.

47. Chinese Orange is one of the few coal-tar colors that are admissible in water color art, and its use had best be restricted to illumination and portfolio drawings. It has a subdued brilliancy and richness peculiar to itself, and very attractive, when used pure. Like all fugitive colors it is more reliable when used in great body.

All of the coal-tar water colors are brilliant, and wash freely, but they are treacherous, and unfit for a professional palette. The Chinese Orange in *pans*, put up by Rowney & Co., appears identical with the Japan Yellow of German manufacture, while the Chinese Orange of the same firm (Rowney & Co.), in tubes, has more of a Burnt Sienna cast. The latter is the more useful color.

48. Neutral Orange, or Penley's Orange.—A combination color, quite useful for first washes over the warm parts of a landscape, or in warm drapery. It affords very clear washes, and in sunset skies constitutes a harmonizing medium between the yellow of the horizon and the blue of the zenith. Used in forming retiring greens for middle distance, or in warming shadows in the foreground, it is of great service, as all its combinations are clear. Admirable in working, and permanent in character, it is a most desirable representative of the orange pigments for general mixtures.

49. Mars Orange.—A very rich and useful orange, often employed in thin washes to secure bright effects of sunlight in landscape or richness of autumnal foliage. Its freedom from a brown hue makes it useful in flesh tints and drapery, while for giving warmth to grays in rock painting, gravel

banks, &c., it is a favorite. Its working qualities and permanency are reliable.

50. Brown Pink.—An orange pigment with a greenish cast; rather unstable in its lighter tones, yet is quite reliable when used in body, and is moreover an excellent shadow color when used thickly in bright sunny foregrounds. Transparent, and works well, pure and in combinations.

51. Burnt Sienna.—A favorite warm, transparent brown or orange. Washes well and is permanent, but its great depth and power cause it to be used principally in mixtures. With Antwerp Blue or Indigo it forms desirable olive greens, and is often used to intensify the lighter ochres.

52. Burnt Roman Ochre, or Spanish Ochre.—Quite similar in color to Burnt Sienna, but has more of a reddish cast, and is less transparent. Very useful for the warm browns of decayed autumn leaves. Is permanent, and in all respects a desirable color.

PURPLES AND VIOLET COLORS.

53. Purple.—A cake color bearing the stamp of "Purple," is sometimes seen in old color-boxes, and some colormakers of the present day continue the issue of a pan color bearing this mark. Rowney's Purple approaches a violet, and is much more blue in hue than the Purple of Schoenfeld & Co. All *purple* pigments are regarded with distrust by professional artists, and the color is preferably combined on the palette. In mixing a purple, the red and blue should both be free from any trace of yellow.

54. Indian Purple.—A strong, advancing color, of an intense purplish crimson hue, formed from cochineal and sulphate of copper; used sometimes in drapery, on foreground figures, and fruits, flowers, &c. It is of service in powerful grays and bluish purples, but not permanent when exposed to light and air, as it is liable to become darkened, even to blackness.

55. Magenta.—A brilliant and beautiful deep crimson, made from coal-tar. Its working and combining qualities are satisfactory, but it is treacherous and unreliable like all aniline pigments. It is very popular with amateurs for portfolio and album sketches in color, but is discarded by professional artists.

56. Mauve, is like the preceding color, of coal-tar origin, and is a beautiful and brilliant violet very nearly approaching that color in the solar spectrum. Though more stable than Magenta, it is not admissible in works claiming artistic merit, except they be generally kept from the light and air in portfolios or drawers.

57. Violet Carmine.—A brilliant and gorgeous violet of a bluish cast, obtained from the root of a plant indigenous to Turkey. It is not reliable as to permanency, except when used in great body, but its strength and beauty are qualities that tempt to its frequent use in foreground weeds and grasses. Its working and combining qualities are good.

58. Purple Madder, or Fields' Purple, is one of the very few purple pigments that are in all respects reliable. In purple draperies, in middle distances, and in every position where a rich yet mild purple is wanted, pure or combined,

this color surpasses all others. It should find a place in the color box of every artist.

59. Violet Lake, is a rich, intense color of German manufacture, very useful in flower painting and landscape foregrounds. It should be used in thick body, as it is in such condition more reliable for stability.

60. Mars Violet, is a dark ochre of a chocolate color, and when produced pure is a most serviceable pigment in landscape foregrounds. In its general hue it resembles Indian Red but is somewhat cooler and more transparent. Its working qualities are fair, and its permanency established. The pigment is sometimes made by combinations, but thus produced, it has not the good working qualities of the genuine. It should be better known.

61. Caput Mortuum.—A German pigment, not so generally used as it deserves, for it is a beautiful, transparent lakey brown or violet, nearly neutral, of universal application in shadows on roads, rocky banks, and of great service in mixtures for the shadows of foliage. A good shadow color for purples. This pigment is evidently an imitation of genuine Mars Violet, though somewhat cooler, having a base of Indian Red. Washes well, is reliable, and the only objection to it lies in its ghastly name.

BROWNS.

62. Brown Madder.—An intensely deep and rich maroon of a brownish cast; of great value from its easy working quality, transparency and permanency. It is not much used in pure

washes, but is of great value in combination grays made with Cobalt, French Blue or Indigo, with a trace of ochre for shadows in middle distances of landscape and backgrounds. Used with any of the yellows it produces glowing tints for autumnal foliage. With genuine Ultramarine, Paynes' Gray or Indigo, it forms pure grays for rocks, tree trunks, shadows, &c. With Blue-black it gives an excellent color for the black hulls of shipping. It is frequently used pure as a shadow color for foregrounds, and in all its combinations proves an invaluable addition to the palette.

63. Roman Brown.—A German pigment, fine, deep and luminous; nearly identical with the Brown Madder of the English, except being a trifle more warm in hue, and deep in tone. Washes well in pale tints; covers well, and works very kindly in all combinations. Is of service in masses of rocks in foregrounds, used pure, and in mixtures.

64. Mars Brown.—A fine color, having a strong resemblance to Raw Umber, but with better washing qualities, and rather warmer in hue. It deserves a place in every color-box where a rich, tawny brown is wanted. Like its related colors, Mars Yellow and Mars Orange, it is reliable in all qualities desirable in a pigment.

65. Raw Umber.—A native ochre of a quiet, greenish, tawny hue, classed by some authorities as a citrine; is an advancing color, of rather turbid tone, except when used in pale washes. It is useful in light grays and greens of a low tone. With Cobalt or Indigo it gives charming quiet greens

for foliage in the middle distance, and with Ultramarine fine tints for shadows in foliage.

66. Chalon's Brown.—A warm brown of a reddish cast, with admirable working qualities, and on this account often used in studies of light and shade, in schools and life classes. Permanent, transparent, and generally useful, pure and in mixtures.

67. Asphaltum is prepared in several forms for the water color artist. In a liquid preparation, it is known by the above name, and in this condition is readily available for sketches. With Cobalt or the lakes it forms serviceable mixtures.

68. Prout's Brown.—An asphaltum water color sold only in liquid form, and much used with a pen in architectural subjects. Its characteristics are transparency, permanency and good combining and working qualities. With Indigo and a little Crimson Lake it gives an excellent shadow mixture; and with Cobalt and Chinese White is good for general sketching purposes.

69. Indelible Brown Ink.—Though not generally known as a water color, it is so useful in outlines and for washing over first forms in shadows, that it may be classed with the browns from asphaltum. It is liquid asphaltum with sufficient "fixatif" to enable the artist to wash over successive layers without disturbing the underlying color. This quality is preserved in the palest washes, and in those of intense color. It is much employed by architects for outlines.

70. Cologne Earth is a color of bituminous base, containing less bitumen than its related color Cassel Earth, and therefore is less transparent. It is also slightly cooler in hue. The best qualities wash admirably, and it is a most satisfactory color with a little blue, to give deep recesses in foliage; or used pure it may be employed in recesses of architectural subjects. It is also an extremely useful color for shading foreground rocks and tree trunks. If mixed with Umber it is said to be more permanent.

71. Cassel Earth.—Similar to the preceding, but is more transparent, and slightly different in hue, more nearly approaching Asphaltum. With all of the blues it forms combination greens of a quiet character.

72. Vandyke Brown.—A rich, transparent color from bituminous earth. Washes admirably, and is equally useful in its pure tints and combinations. With Indigo or any of the blues it gives valuable greens for foregrounds and middistances. Vandyke Brown and Crimson Lake constitute a very rich maroon for advancing parts of the picture, and with the addition of Purple Madder a good shadow color is formed. This color is used in backgrounds and shaded recesses.

73. Burnt Umber.—A warm, quiet brown, very useful when used in not too deep tone. Washes well, is permanent, and in buildings is valuable. Much used in hair washes in portraiture; and in combination sometimes employed in tints for cattle and sheep. It is a natural ochre, and is sometimes furnished so slightly charred, as to approach the hue of its parent color, Raw Umber.

74. Sepia, (Obtained from a species of the Cuttlefish.)—This is, perhaps, in its paler tones, the best working color in the water medium. Equally useful when applied pure, or combined, it is one of the best and most desirable pigments, but when great depth of color is required, India-ink may be added, as great power with Sepia alone is obtained only at the expense of heaviness. With any of the blues or neutral grays it forms a large range of quiet greens, both for distances and foregrounds. As a glazing color for greens it is very desirable, and used pure it makes a good shade color for white drapery. Liquid Sepia in bottles is a convenient form where large quantities of color are required.

75. Roman Sepia.—Same as the previously mentioned with yellow or light browns in combination, from which, with blues, brighter greens are obtained.

76. Warm Sepia.—Same as natural Sepia, with the addition of warm reddish browns or reds.

77. Bistre. A quiet, cool brown, with a slight tendency to green, semi-transparent, permanent, and generally useful. In archæological drawings and sober-shadowed passages of landscape foreground, it is often employed with success. In marine views it is used successfully in combination to produce the peculiar green of water in agitation. Its working quality is of the best when the pigment is of standard make, and its permanency is established by a long history, it having been used from the earliest attempts in water color painting. It is made from the soot of wood or peat fires.

78. Turner's Brown is almost a neutral pigment, the brownish hue being very slight. It is a valuable color, washes well, and can be used in foregrounds for the same general purposes as Sepia.

The Bone Brown of the German catalogues, is quite similar in hue to the above, it being made in the same manner as Ivory Black, with less calcining. Caledonian Brown and Cappagh Brown are also found in German water colors, but they are not much used in this country, as well established pigments of better quality, take their place.

BLUES.

79. Genuine Ultramarine.—The most expensive of all colors, and the most brilliant and clear in hue of all the blues. It is permanent under the most severe tests, and produces charming aerial effects when used by a skillful hand. Yet, notwithstanding these fine qualities, it has some others that detract from its general usefulness. Grinding cannot entirely divest it of its native gritty quality without injury to its hue, and the same fault deprives it of the even flowing character that every atmospheric color should possess. Moreover, it is not a color showing the best qualities in combinations, when used in much strength. But with all these serious drawbacks, its power and beauty are such that it will always be used to a great extent, for it carries with it whether used pure in hatching, or in washes, light and atmospheric softness that can be obtained from no other color. When used in washes, a little gum water will assist in imparting good flowing qualities. It is much used in hatchings, super-

imposed on other color, and in this method is employed with charming effect on shade or shadows in distances. With proper managment the artist is amply repaid for the pains-taking necessary in working it. In photographic colored portraiture it is of great value, and with Aureolin, Rose Madder, and White, it forms pearly grays of exquisite tenderness for distances. When compounded with white, Chinese White should be employed, as Constant White—(Permanent White)—is liable to an acid tendency, which is injurious to Ultramarine.

80. Ultramarine Ash.—A pale, tender azure, of better working and combining qualities than its parent color, Genuine Ultramarine. Its best results are obtained when used pure, or nearly pure in backgrounds, with a hatching movement of the brush. The most charming sky tints are produced by this pigment, when combined with Rose Madder, Cobalt, and a little Yellow Ochre or Light Red.

81. Smalt, or Dumont's Blue.—The coarser quality of this color was generally sold, from its discovery, under the name of Smalt, but its finest grade was for a time known in water color as Dumont's Blue. It is now stamped in cake and in other forms as *Smalt*, and this is the generally accepted name. It is a vivid, gorgeous color, compounded of cobalt and silica, rather opaque, somewhat gritty, and does not wash the best; but its permanency is undoubted, and used in hatching or in small bodies in flower painting, it is a desirable color. It is much used in illumination and heraldic painting, and for these purposes can be used less finely ground,

and therefore with more intensity, as fine grinding deprives it of its greatest power.

82. French Ultramarine, or French-blue.—An imitation of Genuine Ultramarine, much less expensive, and a successful substitute, but when used in greens, a minute quantity of Antwerp Blue may be added to it. It works better in washes than its more ambitious namesake, and when of standard quality, combines well with other colors in producing greens, purples and grays. For mountain scenery, the deep blue of distant hills at high altitude is well produced by a preponderance of this color in the grays, Cobalt not being strong enough for the purpose. Its best use is in aerial tints. A very fine variety of this pigment is sold under the name of Brilliant Ultramarine.

83. New Blue.—Under this name a blue has been placed on the market by Winsor & Newton, of a grade intermediate in depth between French-Blue and Permanent Blue. It is a useful variety of artificial ultramarines, of a deep, rich hue, with good working qualities, permanent, and valuable in mixtures.

84. Permanent Blue.—This is, comparatively, a new candidate for popular favor. Its character varies with different makers, the German article being somewhat deeper in tone than the English pigment, which has a Cobalt hue. Though accounted permanent, as its name asserts, it is really not so reliable for stability as its deeper toned relatives, French Blue and Brilliant Ultramarine. All colors manufactured in the paler grades are less reliable for stability than the deeper grades

of the same: the Cadmiums are an example of this. Greens formed with this blue are rich and clear, and it is a very useful color for many purposes.

85. Italian Ultramarine, or Italian Ultra, as the catalogues abbreviate the name, is a form of artificial ultramarine that proves very popular when once tried by the artist. Its deep washes are very intense, while its paler conditions are very pure and tender. Like all of the French artificial ultramarines, this color with an Italian name, is permanent and desirable in every respect.

86. Azure Blue.—This color is a form of Cobalt Blue, though the name Azure is sometimes given to Smalt and Ultramarine. It has all the characteristics of Cobalt, though somewhat stronger, and flowing more evenly from the brush, gives smoother washes.

87. Leitch's Blue.—A more powerful blue than the preceding, it being formed of Cobalt and Prussian Blues in a carefully prepared mixture. It is a modern color, and is essentially the same as the pigment following.

88. Cyanine Blue.—This color has a base of Cobalt Blue, with enough of Prussian Blue to give it power, and improve its working qualities. It is esteemed permanent, having the same characteristics as its components.

89. Cerulean Blue, or Cæruleum.—A Cobalt Blue of German origin, having a tin base, and possessing the distinctive property of preserving its blue hue by artificial light. This

is a very important quality in galleries where evening exhibitions are popular. This color, like other forms of Cobalt Blue, is semi-stable but there is a chalky appearance about it that detracts from its value for many uses. The old color, Blue Verditer, has a hue very similar to this pigment.

90. Cobalt Blue.—A great favorite, and a blue that answers an end that is reached by no other pigment yet discovered. It is the most delicate, retiring, and atmospheric of the blues in its light washes, and admirable for its transparency, permanency, and kindly combinations with other colors. In its deep washes it does not show the even quality of some related colors. It bears to the blues about the same relative value as Aureolin to the yellows, and Rose Madder to the reds, and is of great service in producing aerial perspective. The greatest value of its combinations is found in its light washes, in which, with a little Rose Madder and a small quantity of some retiring yellow, it gives a fine azure tint. Combined with Ultramarine Ash, and a slight quantity of Light Red, it produces a very tender atmospheric azure. Glazed with a light wash of Vermilion or Light Red, it has a peculiar richness. With Vandyke Brown it gives pure greenish grays for distant foliage.

91. Intense Blue.—This blue is made from Indigo by solution and precipitation, and by this treatment the color is made more pure, intense, and permanent. It is a valuable addition to the color box, both as a local and auxiliary color, and has all the good working and combining qualities of its esteemed progenitor.

92. Antwerp Blue.— A modified and delicate form of Prussian Blue, the chief value of which is found in compound greens for landscapes. Occasionally used in foreground draperies. Its transparency, working and combining qualities are the same as its more powerful relative, and its semi-fugitive character the same.

93. Prussian Blue.—The strongest, deepest, and most advancing blue of the whole list, but its lack of atmospheric qualities, and its crude, greenish cast, have limited its use, both pure and in mixture, to prominent points in foregrounds. It forms strong greens with any of the yellows, and with Sepia or Vandyke Brown gives deep, clear greens for prominent shaded parts of foliage. It was formerly used much in greens for flower painting, but Oxide of Chromium and the greens of Indigo mixtures have rightfully superseded it,—yet in very prominent points in leaf-groups it can be used effectively in small quantity.

Prussian Blue deepened with a little Blue Black, to imitate Indigo, gives greens with yellows, that stand better than Indigo greens, but they are not quite as bright as the latter. When this color is used with "hard water," or that containing bicarbonate of lime in solution, it is liable to part with its color. With Light Red, Prussian Blue gives a fine sea-green neutral. This blue is destroyed when used in combination with colors having a lead base.

94. Indigo.—This invaluable color, though not strictly permanent is considered sufficiently reliable to be used in all combinations. It is emphatically a color for mixtures, being

seldom used pure; but in all combinations it is of such great service that its employment is universal. Its clearness in light and medium washes, its kindly union with other colors, and its transparency, cause it to be the chief factor in many grays and greens for landscape. But to secure its best service it must be worked in a peculiar manner, as it is a color that will not bear repeated washings, especially in its deep tints, without heaviness and opacity. If the full power wanted can be realized at the first application of the brush, the effect is much better than if reached by two or more layers. This law holds good in all color, particularly in mixtures,—but Indigo is peculiarly susceptible to it. Its want of permanency is in a measure corrected in greens when Gamboge is used with it.

GREENS.

95. Emerald Green.—A vivid, light, mineral color formed from the arsenite of copper, and useful when employed in small quantities, pure, in brilliant lights of large masses of sober greens. Sometimes in brilliant draperies, or in stripes on boats in marine views, it is very valuable. When combined with Lemon Yellow or Aureolin in light washes it is useful for middle distances in landscapes. Poisonous, like all greens formed from arsenic and copper.

96. Permanent Green.—A German water color, produced in three grades, light, medium and deep. The lighter grade has much of the hue of Emerald green, though a little more of the cast of a vegetable green. Its use is limited except

in its deeper grades. If its reputation for permanency holds good, it will be a valued addition to the palette.

97. Veronese Green.—A French color, of great brilliancy when pure, partaking of the qualities of Viridian. It is permanent when unadulterated, and a valuable pigment to focus other greens of more sober quality.

98. Chrome Green.—This was a color formerly in much repute among the old English masters in water color, but it has been replaced in late years in landscape by more acceptable pigments, and is now little used. It is more valuable in oil than in the water medium. It has a pleasing effect as a uniting color in some cases between the transparent colors of the distance and the foreground. It is produced by the German colormen, by a process that renders it quite stable. Not permanent as a mixture, the Chrome Yellow acting upon the Prussian Blue in the compound, and eventually destroying it.

99. Hooker's Green, No. 1.—Formed of Prussian Blue and Gamboge. A light green of somewhat opaque character, advancing to the eye. Used sometimes for focusing to a brilliant point a mass of sober greens. Its chief use is in flower painting, where it may be employed sparingly, also, in representing the fresh intense greens of the house-garden and the newly opened leaves of spring. Not entirely permanent, but washes well. This color and the following are best preserved in cake form; as in moist color the blue component is more fugitive than the Gamboge, eventually giving the color a yellowish hue.

100. Hooker's Green, No. 2.—A deeper and cooler green of the same general character for working and semi-stability as the foregoing.

101. Green Lake.—A rich, transparent green of German make, sold in both light and dark grades; useful pure, and with Indigo or Payne's Gray, for the shaded foliage of foregrounds. Its working qualities are excellent but in permanency it is wanting, time and foul air ultimately darkening it.

102. Emeraude Green.—A French green of deep, cool, transparent quality, nearly identical with Viridian, not much used by English or American water colorists. It is very intense in its deepest tones, clear in its light washes, and undoubtedly permanent.

103. Oxide of Chromium.—Made of two grades, green-blue and blue-green. Very permanent, but not the best working color from its opaque character; yet its use in its lighter washes, in flower painting and general foreground foliage is quite charming, and in combination with some of the lustrous, transparent yellows, gives a rich effect. It is very effective in opaque color mixed with Chinese White or a light yellow possessing some body. Is known in some localities as True Chrome Green.

104. Viridian.—A strong, rich, yet delicate green of a cold, advancing quality. It can be used pure or with yellows, to focus other greens in foregrounds; or in minute quantities in grays, to which it gives an advancing yet melting tone, and

thus employed is useful on gray tree trunks, and foreground rocks of a mossy character. With Burnt Sienna and Aureolin it is of great service in rich autumnal foliage tints.

105. Green Bice—An old color not much used, but still found in the stock of some colormen. We do not recommend its use, as it is one of the least valuable of the copper greens. It is made of several grades and is found with pigments arranged for flower painting. "Green Verditer" is a synonym for this color.

106. Verdigris.—A French green of a clear, vivid, intense hue, suited to illumination, and to some of the purposes of Emerald Green. It is not deemed permanent, and is not a favorite with artists. For topographical drawing and plan work, it is furnished in liquid form, in which state it is not brilliant in hue.

107. Sap Green.—An old color of vegetable origin, and fine transparent and good working qualities; not permanent, but from its peculiar, rich, brownish hue, of value in flower painting, and in foreground moss-covered rocks.

108. Prussian Green.—A very strong, deep color, generally made by a trace of Gamboge added to Prussian Blue, and bearing to the greens the same relation as Prussian Blue to the blues. Its cold, advancing character hardly fits it for vegetation, yet it is useful in small quantities in foreground draperies.

109. Bronze, or Bronze Green.—A sober, yet strong green, suited to foregrounds and shaded recesses in prominent parts

of foliage. In connection with other colors it is useful in flower painting and in backgrounds of figure studies from life. Semi-stable and works well.

110. Terre Verte.—A turbid, semi-opaque, bluish green of low power, suited to middle distances in landscapes, when compounded with quiet yellows and a trace of Rubens' Madder; it is also used on distant groups of leaves in flower painting. It is a natural earth, and permanent. Burnt Terre Verte is a valuable, cool brown.

111. Olive Green.—A warm, quiet color, formerly called Dewint's Green, of advancing quality and transparent brownish hue; a connecting link between Brown Pink and strong positive greens. Valuable in the rich foliage of early autumn. Not considered strictly permanent, but the quality produced by the best color makers, is accepted with confidence by artists.

NEUTRAL COLORS.

112. Payne's Gray.—A noted and valuable, cool, bluish gray, of English origin. Its fine working character, transparency, combining qualities and semi-retiring nature, have given it great popularity in all branches of water color painting. With the transparent yellows, it forms a range of clear, cool greens, and with Sepia or Neutral Orange is a desirable tint for rocks and cliffs in the middle distance of landscapes. For foregrounds Burnt Sienna may be sparingly mixed with it. Payne's Gray, of German make, is more purple in tone than the English pigment.

113. Charcoal Gray.—A new aspirant for popular favor. It is clear in its light washes, and quite deep in its strongest tones. It is evidently a good pigment for drawings in black and white; nearly the same as Vine Black or Blue Black.

114. Black Lead.—A new form of graphite or plumbago, finely ground, pressed in cake form, and named black lead in deference to the popular notion that pencils are of a composition analogous to lead. This new form of graphite, being of the finest quality and skillfully prepared, rubs from the cake as freely as any water color and works as well with the brush as any black. It is even in all grades of its washes, and needs no fixatif to make it fast to the paper. In pencil drawings, skies and distances can be thus advantageously laid in this gray with the brush, and the texture of the foregrounds given with the pencil point. This gray is not powerful, but it combines readily with the whole range of the color box, and is altogether a unique and interesting appliance in the arts. Useful for mixing with white, as a gray for opaque color.

115. Blue Black.—Formed from young grape vines, charred; is the best black for general mixtures, as it is cool, transparent, and in combinations free from the sooty character of some blacks when in union with other pigments. The blacks are principally useful in water color for forming deep greens, for which purpose Gamboge or Aureolin may be combined with them. Blue-black is a good variety of black for this use as it washes well, and in mixtures is clear.

116. Lamp Black.—A good working pigment, clear in all its washes, and intensely deep in its strongest tones. In

India-ink drawings, Lamp Black may be used with advantage in the deepest markings. Sometimes it is used in combination with Light Red or Venetian Red, in storm clouds, yet Blue Black is a better article for the purpose. Lamp Black when used dilute in water color is regarded as a standard normal gray. This pigment with any of the madders gives a good mixture for coloring bay horses and cattle.

117. Ivory Black—A valuable black, fine and delicate in character and of a brownish hue. It does not work well in large washes, but in the hands of a master, its value is very great both in its light and deep tones. Ivory Black being simply a pure form of animal charcoal, has a strong bleaching power that destroys color in pigments of an organic origin with which it is combined; Blue Black and Lamp Black have the same influence in a less degree. Gum solutions have a tendency to counteract this effect. Compound black, made with Indigo, Sepia and Crimson Lake, is best for deepening color.

118. British Ink.—An English substitute or rival for India Ink. It washes evenly and has all the good qualities of the best India Ink, except that it does not penetrate the grain of the paper as freely, and is therefore more liable to "wash up" when successive layers of color are used.

119. Neutral Tint.—A well known and valued tint, sometimes sold in two or three grades or degrees of warmth. It is a pure and good working gray, but being advancing in its character should be employed principally in foregrounds. It is chiefly used pure, and generally in mechanical and archi-

tectural subjects; but if employed in landscape, may have a small portion of Ultramarine Ash combined with it.

Neutral Tint is not absolutely permanent in its character, but a small quantity of Ultramarine Ash added to it will assist in giving it stability.

120. India Ink.—Not generally classed among water colors, yet there is no amateur or professional who does not consider it indispensable in the color box, especially for studies in monochrome. The value of this old pigment is not appreciated, until it is seen in the drawings of a master, whose vigorous and positive handling leaves the wash on the paper at one stroke of the brush. If successive layers of tint are given, they should be added with the previous wash well dried, and with very little color in the brush. On page 24, the paragraph on the use of India-ink in outlines, will be found to contain suggestions on its qualities.

India-ink is not generally used in combination with water color. The habit of some flower painters, shading the leaves with ink, before washing the green, is objectionable, as the luminous character of the green is thus destroyed.

White.—While, correctly speaking, neither white or black should be classed as *colors*, they are popularly included in the enumeration of them. Chinese White has been so extensively used in the opaque method of water color painting, that it finds a place in every color box. Permanent, and capable of being used in any degree of tenuity, it is of the first importance, used both pure and combined. In heavy impasto lights, for foregrounds, its mixture with color, is best

effected with the palette knife, in the manner of oil colors. If very positive high lights of pure white are wanted, the common Silver White, dry in drop form, is more brilliant, crushed to fineness with the palette knife, and mixed with a little gum-water; but it has the fault of instability from foul air, applicable to Flake White, and all white leads. Permanent or Constant White, occasionally used in water color, is liable to an acid condition, which affects some colors unfavorably when combined with it. Lights with Chinese White should seldom be laid on pure; a small quantity of Yellow Ochre, or Raw Sienna, added, gives them a better hue.

We recapitulate the foregoing list of pigments, so far as to include such primaries, secondaries, and their related colors, as are reliable for *permanency.*

Permanent Reds.—Pink Madder, Madder Carmine, Rose Rubiate, Rose Madder, Rubens Madder, Indian Red, Persian Red, Light Red, Venetian Red, Naples Red, Vermilions.

Permanent Yellows.—Aureolin, Cadmium, Deep Cadmium, Lemon Yellow, Mars Yellow, Naples Yellow, Yellow Ochre, Roman Ochre, Brown Ochre, Gold Ochre, Raw Sienna.

Permanent Blues.—Cerulean Blue, Azure Blue, Leitch's Blue, Cobalt, Smalt, French Ultramarine, New Blue, Permanent Blue, Italian Ultra, Genuine Ultramarine, Ultramarine Ash.

Permanent Greens.—Oxide of Chromium, Viridian, Emerald Green, Terre Verte, Permanent Green, Veronese Green,

Permanent Purples and Violet.—Purple Madder, Mars Violet.

Permanent Orange.—Bt. Roman Ochre, Bt. Sienna, Cadmium Orange, Mars Orange, Penley's Neutral Orange.

The stable green, purple, violet and orange pigments it will be seen are few. Many of the prominent colors, especially those related to the primaries, red, yellow and blue, are made in a form by the colormaker, to be used pure; but the secondaries, green, violet and orange, being nearly all compound colors, are, to a great extent, mixed by the artist to meet his wants. There are in the colormakers' list, seventeen or more greens for use in the water medium, but the combinations of this color, by the artist are infinite. Only six or seven true purples or violet colors are manufactured for the water colorist, the artist generally preferring his own mixtures. Of the remaining secondary, orange, only five or six varieties are produced by the colormaker; of the grays, four are made, viz.: Payne's Gray, Charcoal Gray, Black Lead and Neutral Tint, though for general purposes the blacks may be included in the list.

A color, to be a primary, (red, yellow or blue,) must bear a near approach to prismatic intensity; but the families of these colors are very large, and it is principally in their domain that the discoveries of the chemist and colormaker have been made in late years. In browns very few changes have have been made, either in adding to, or in dropping from the list.

A new order of classification has been attempted in Horneman's Technical Water Colors, in cakes, originally designed for topographical, mechanical and architectural uses. The ordinary tints, used in mechanical and architectural designs,

representing various metals, stones, bricks and woods, were first attempted; these were followed by the various greens answering to the general colors of mountain, meadow and garden vegetation; by blues, purples and grays, corresponding to some atmospheric conditions; by ochres and browns, representing sand banks, gravel, stony foregrounds and cliffs. In union with these colors the most useful and prominent of the old order, are retained. How far this arrangement will be accepted by artists remains to be seen; yet the colors thus far produced are of excellent quality, and unexceptional in their working.

Until a comparatively late period the manufacture of water colors was in the hands of London colormen, and, even at the present time, the most extensive and celebrated factories are in England. The following are manufacturers of reliable water colors:

England.—Newman, Geo. Rowney & Co., Winsor & Newton, Roberson & Co., J. Barnard & Son.

Germany.—Schoenfeld & Co., Dusseldorf; Ernst Riha, Pilsen, Bohemia; "Horneman's (Successors)."

France.—Bourgeois, aine', Paris; A. Lefranc, Paris.

The "slow drying" water color, in tubes, lately issued in London, with the old stamp of Newman, have been endorsed by some of our best artists, but time is required to test them fully. The leading firms, Winsor & Newton and Geo. Rowney & Co., have placed upon the market their moist color in tubes, and they prove as thoroughly satisfactory to artists as the pigments of the same firms, in cake and pan form.

French water colors have not been sold to any great extent in the past by any of our supply stores, but they are now, with the best English and German, kept in full stock by F. W. Devoe & Co., of New York. The French pigments are in the usual square cake form, and in hexagon, and disk shape. They are very finely prepared; and represent not only the standard pigments, but a large number of conventional tints.

LIQUIDS AND PREPARATIONS FOR WATER COLORS.

In ordinary practice, the artist need not concern himself with gum solutions, megilps, or mixtures for the colors, the condition of the pigments as they come from the hands of the colormaker being satisfactory for most uses. But for large works and intricate effects, some help may be had from various solutions.

The art term, *vehicle*, signifies the solution or liquid used to give cohesion to a color as it is applied to a surface, to expedite or retard its drying, or give it gloss or depth of shade. Various devices for water colors have been adapted to this purpose; weak solutions of gum Senegal, gum Arabic, and Tragacanth being sometimes used in foregrounds. A weak solution of borax and Tragacanth, over color, or united with it, will so solidify it, that it will not "wash up" on applying another layer. White of egg, well beaten, and added in small quantity to water, slightly tepid, causes color to spread evenly and gives it brilliancy, while it retards the drying in proportion to the amount of egg used. More of this vehicle can be added to foregrounds than to middle distances; while the distance is left without it. Foregrounds thus re-

tarded in the drying, admit, in their damp state, of manipulation with scrapers or knife points, to get sharp, angular lights, or texture of grasses.

The modern water-megilp will be found an excellent article if judiciously used in impasto lights in foregrounds; and pure glycerine, in very small quantities, is also employed. Ox-gall may be used if the paper sheds the color from an apparently greasy or oily nature of the surface. The German tubes often contain, above the color, a quantity of vehicle, to protect the contents from drying; as this gathers at the mouth of the tube it can be expelled and cast aside or retained on the palette, to modify the drying of the color. But with all the devices for improving the color, the artist will do well to bear in mind that for pure, delicate, atmospheric washes in skies or distances, the less of any vehicle he uses, auxiliary to the prepared pigment, the better the result.

FIRST PRACTICE WITH COLOR.

1st. Flat Tints. The pupil should first acquire ability in laying a flat, smooth wash of color; this will discipline the judgment as to the necessary amount of color to be taken in the brush, and impart skill in its application. A large round camel hair brush is best for this purpose, and the color may be Sepia or any other quiet, sober-toned pigment. Having stirred the color thoroughly with the brush, to get it well incorporated with the water, bring the drawing board to the angle of an ordinary desk, and begin at the top of a space a few inches square. With the brush quite full, pass it steadily across the top from left to right, back and forth, with

a downward movement until the color is exhausted. If the paper is slightly moist the result will generally be better than with the surface entirely dry.

2d. After the first exercise is well mastered, try a graded tone, darkest at the top. To succeed in this it is well to have two or three grades of color prepared, beginning with the deepest, and when a third of the space is covered, throw the color from the brush, and quickly taking up the next lighter wash, proceed a short space and finish with the weakest color. Reversing the operation, begin with the light color and proceed with the darker tones to the bottom of the square. The power to make these washes pure and well graded is all important; it is the alphabet of coloring, and when well conquered, the succeeding steps will be comparatively easy.

3d. The next exercise should be an effort to copy a plain sky or distant foliage from a good example. If different cake colors are used in the mixture, one should never be rubbed in a mass of color taken from another, but all color should be placed on clean crockery, and afterwards mixed with the brush.

4th. Another lesson may be a wash of one color superimposed or overlying another;—Carmine for the first and Gamboge for the second, or Aureolin and Indigo. To do this well the first wash should be laid with a full brush and left to dry thoroughly; then with a brush tolerably dry, pass over it some harmonizing tint, taking care not to stroke the paper while damp. All layers of color should be made on

parts well dried, for otherwise the underlying color will very likely wash up, and defilement of tint be the result.

5th. Try, as the next exercise, with a full brush, one wash of Cobalt and one of Light Red, contiguous on the paper, and while the color is wet and abundant, with the brush carry one wash a short distance into the other and study the charming hues produced by the curling and intermingling of the two. Next try Indian Yellow and Indigo, or Neutral Orange and Payne's Gray, with the same process. These washes will educate the eye in a sensibility to tones and hues. French water colorists are adepts in these transparent, flowing, interchangeable washes. It is their partiality for transparent coloring that has led to the use of their term Aquarelle, for works in this method, as opposed to opaque color.

6th. As the next progressive exercise with the brush, blended and sharp contrasts may be attempted in a study of clouds. This will be useful, not only in conferring skill in cloud painting, but it will give the ability to vignette sketches in general practice. Vignetting is the blending of the picture around its edges in distinction from the angular, circular or elliptical forms. This method of vignettes often gives more emphasis to the contrasts of a picture, by avoiding contrasts of color at its edge. Blending can be done by several methods, besides the grading process described in the second division of these recommendations on using the brush. Dampen the paper slightly, by placing clean, wet blotting paper on the surface for a few moments, or pass a flat blender, dampened, over it. Then apply the color; it

will spread and give softened edges to the wash, more or less blended according to the dampness of the surface, while the general body of the tint will be pure and even. This is much used in the first stages of a picture, technically called "blotting in." Another method is to apply the color, with very little water in the brush, grading it with a hatching movement. Still another, is to wash the surface of the drawing, by pouring water on it after the application of the first tint; then, when nearly dry, repeating the color with as many successive washings as may be necessary. This, skillfully done, gives atmospheric softness, but if excessive, imparts an appearance of wooliness to the surface.

Blending may also be accomplished by dampening the wash as the picture approaches completion, and when nearly dry reducing the color by bread crumbs lightly rubbed over the parts desired lighter. Small lights and blended forms may also to some extent be skillfully obtained by scraping the surface with a knife, when entirely dry. All of these processes are successful in skillful hands if the paper be of suitable quality.

COMBINATIONS OF COLOR FOR GENERAL PRACTICE IN LANDSCAPE.

It is no part of a work like the present, on the materials, theory and application of water color, to treat of the derivation in nature, of all color from the solar ray; to analyze the solar spectrum, or even, at any length, to enlarge upon the philosophy of harmonies in contrasts, or analogies in color. This important sub-stratum of art-knowledge is illustrated in larger works, notably those of Chevreul on color, Fields'

Chromatography, D. R. Hayes' and Geo. Barnard's Water Color Painting. The theories of primary, secondary, and tertiary color, with their complementaries and harmonizing tints will be found in Prof. Church's (Cassell's) manual of Color, and in Barnard's work, mentioned above.

Presuming therefore, that the reader is versed in these preliminaries of knowledge in color, and has tolerable skill in outline, composition, light and shade, we close this division of our subject with a few general truths and suggestions that will help him on the path to success.

The qualities of pigments have been mentioned on previous pages and dwelt upon in their art aspects; but the importance of this knowlege is so great that we here recapitulate the general divisions, recommending that the subject be thoroughly studied:

1st. Opacity or transparency.

2d. Permanent or fugitive qualities.

3d. Advancing or retiring character.

4th. Affinity or antipathy in mixtures.

5th. Suggesting coolness or warmth.

It will be found in practice that but few colors are applied pure, as they are made by the colorman; they are combined on the palette more or less, according to the demands of the picture. It has doubtless been observed by the reader that of more than a hundred different pigments on our list, nearly three-fourths belong to the families of the primaries—red, yellow, and blue. This fact shows how important to the artist is a ready power of color combination,

The primary and secondary colors, or those that approach them in character, when used pure or nearly pure, are in fact *focusing* colors, and as such are used to give emphasis to points of interest. Their character is generally advancing and attractive, and for this reason they are employed on draperies of figures, and introduced for their brilliancy on flowers, birds, etc.; but the color used for these points of emphasis should be chosen with reference to the prevailing hues of the picture. If the dominant color be green, its complementary red, would be the contrasting or emphasizing color; if the prevailing hue be purplish or violet, yellows may be placed, by some device, in the front; if the warm browns of autumn are prominent, blue would be a refreshing color, for some small advancing point. If less brilliancy is desired, as in the harmonies of analogy, pure secondaries may be used for points of interest; but if primaries are employed, they must be small in quantity, and it may be remarked that they are more effective, if introduced in conjunction with some violent contrast of black and white. If the sentiment of the picture be gay or joyous, as children at play, two, or even the three primaries may be used, but preferably, not contiguous and generally, as above noted, in connection with white and black. If the sentiment of the picture is tender or sad, and its tone subdued, points of interest may be marked by some secondary color, or by some violent contrasts of dark and light neutrals.

These elementary truths, as to the general use of the primaries and secondaries can be enlarged upon as the pupil advances in progressive steps to higher ground in the refine-

ments and intricacies of color. With the young artist there is more danger of too much brilliancy than of its converse, and the sentiment of few subjects will allow gay coloring as the chief characteristic. A story told by quiet and modest coloring is usually in good taste, and acceptable to a refined and cultured mind.

Combinations of Color for Special Parts of a Picture.

The Sky.

When there is poverty of material in a selected subject of landscape or marine view, compensation can be had by interest given to the sky.

The color of the zenith, it will be observed, is deeper than that of the sky near the horizon. By blotting a pure blue on white paper, and examining it in connection with the sky, it will be found that the latter is really a tender, bluish gray. Some latitudes show a modification of this general truth, as we find Italian skies are often quite blue; yet the prevailing tones of the skies of temperate climates, are a delicate, tender azure gray. This prevailing color is affected by heat and evaporation from the earth in warm weather, so that we find more danger of crudeness in blue, than of heaviness in grays. Cobalt, toned with a little Rose Madder and Yellow Ochre, will give a good azure, or, if a more subdued effect be desired, Ultramarine Ash, Cobalt, Rose Madder and Light Red. Brighter tones may be produced by substituting a minute quantity of Aureolin, for Yellow Ochre; and almost any desired change can be realized by varied quantities of these mentioned colors. Pale Cadmium, in thin washes, may be

used with Rose Madder for sunsets, and Indigo and Cobalt, or Indigo and Purple Madder, for the zenith. These washes should be given with a full brush.

For the delicate grays on the underside of cumulus clouds, Cobalt and Light Red, with a slight trace of Aureolin will be found desirable, while for the dark nimbus, or rain cloud, a gray of Indigo, Sepia and Madder Lake, or Blue Black, Light Red and Aureolin will be a good representative color. These mixtures can be modified in their constituents, as warmer or cooler tints are desired. Delicate half-lights may be taken out with bread crumbs by first dampening the forms with pure water, or by applying blotting paper to the wet surface, and wiping the paper briskly with cloth or wash leather.

GRAYS FOR DISTANCES.

The purplish, delicate grays of the distance, in sunny effects of landscape, require the most retiring colors, as Cobalt and Rose Madder, with Yellow Ochre; sometimes in combination with a little white, to give a hazy effect. A richer tint is made, of Genuine Ultramarine, Rose Madder, with a trace of Aureolin and white; or Ultramarine Ash, instead of the stronger color, if a quiet tone is desired. A tint of more advancing quality can be made of the same colors as above, substituting French Blue as the base of the mixture. Still more advancing to the front, use Cobalt and Sepia, or French Blue and Sepia, giving either mixture a greenish hue, if desired, with Yellow Ochre, or Aureolin. Either of the two last combinations with Ultramarine, or Indigo and Sepia with Madder Lake may be used, if the subject is a mountain scene, painted in a high key of color.

COMBINATION GREENS FOR DISTANCES.

For tender, retiring greens, the following couplets of color may be used in varied proportions, beginning with the most delicate and atmospheric, and advancing to the front:

Cobalt & Lemon Yellow, New Blue & Yellow Ochre,
Cobalt & Yellow Ochre, French Blue & Roman Sepia,
Cobalt & Roman Ochre, Indigo & Roman Sepia,
Indigo & Mars Yellow.

The more delicate of these mixtures may have a small quantity of Chinese White, to give the hazy effects of some conditions of the atmosphere. Greater richness and strength may be given the first three, by the addition of a small amount of Genuine Ultramarine.

COMBINATION GREENS FOR MIDDLE DISTANCES.

Cobalt & Vandyke Brown, New Blue & Gamboge,
French Blue & Terre Verte, French Blue & Aureolin,
French Blue & Prout's Brown, Indigo & Neutral Orange,
French Blue & Neutral Orange, Payne's Gray & Neutral Orange.

In the above greens, New Blue may be used instead of French Blue, if less strength and brilliancy are wanted.

GREENS FOR FOREGROUNDS AND FLOWER PAINTING.

Oxide of Chromium, pure, or with Aureolin.
Indigo & Raw Sienna, Indigo & Burnt Sienna,
Indigo & Gamboge, Indigo & Italian Pink,
Indigo & Indian Yellow, Indigo & Vandyke Brown,
Indigo & Brown Pink.

FOR SHADES IN FOREGROUND FOLIAGE.

Olive Green or Brown Pink, and Payne's Gray,
Payne's Gray & Prout's Brown, Payne's Gray & Vandyke Brown,
Blue Black & Sepia, Payne's Gray & Bistre,
Payne's Gray & Burnt Sienna, Hooker's Green, No. 2.
Deep Green Lake, pure or modified.

INTENSE GREENS.

Intense Blue & Aureolin or Indian Yellow,
Hooker's Green, No. 1 and 2, Emeraude Green,
Antwerp Blue & Indian Yellow, Permanent Green,
Prussian Blue & Indian Yellow, Viridian,
Emerald Green, Veronese Green, Prussian Green.

FOR ROCKS AND TREE TRUNKS IN FOREGROUNDS.—GRAYS, ETC.

The color of rocks, in foregrounds, will be found quite gray, cool or warm, stained often with iron or other minerals. Sandstones are an exception to the general tint, and in some localities the yellows and browns prevail; the Yellowstone region, being quite unique and charming in the tints of its geological formations.

Rocks in foregrounds require grays with advancing colors in their lights, and quiet, transparent grays, browns or maroons in their shades and shadows. Caput Mortuum is a useful tint for rock shadow, used pure or modified by Ochres, Lakes, or Payne's Gray. Other grays may be Indigo and Burnt Sienna with a little Lake, Brown Madder and Indigo, Payne's Gray and Roman Brown, Indigo and Venetian Red, Indigo and Purple Madder, Neutral Tint, Payne's Gray, (German).

The foreground grays, warmed by Burnt Lake towards maroons, by Neutral Orange, Vandyke Brown or Burnt Sienna towards rich browns or orange, by French or Antwerp Blues or Viridian towards cool grays or greens, will be found to meet most of the requirements of the artist for rock painting. For warm tints in tree trunks and limbs, Sepia and Crimson Lake, Sepia and Indian Red, Vandyke Brown and Burnt Carmine or Purple Madder and Ultramarine, will give good results.

WATER.

It may be remarked as a general truth in painting water, that the prevailing color of the sky may be repeated in bodies of distant, quiet water, but some reservation may be made for effects of mist, storms, brilliant morning and evening tints, etc. Cast shadows are apparent on turbid water, and patches of dark violet and gray are often seen on distant lakes in conjunction with brilliant lights, from the partial obstruction of the sun's rays by a dark cloud. A close observation of atmospheric phenomena in their relation to water, will give the artist power, in its representation, and experience must be had from this source to secure success.

Cobalt may be the base for all grays of distant water, except where it bears the reflections of foliage, etc., when the governing color of the foliage, a little subdued, may be used, and the horizontal delicate markings of wind ripples and other brilliant lights, be made by thin, delicate washes of white, or careful subduing of the color by some of the processes heretofore described. For portions of water in fore-

grounds, strong grays, formed with a base of French Blue, Indigo, etc., may be used. Payne's Gray, variously modified, is an admirable color for water, in marine views, both for water at rest and agitated by storms; and in the immediate forefront, the peculiar green, characteristic of sea-water, is well given by a little Raw Sienna, as an underlying color, or Bistre, mixed with the prevailing tint. For water as seen by sunset, moonlight, or in general night effects, Raw Umber, Madder and Indigo give a very good tint.

SANDBANKS, ROADS, ETC.

Caput Mortuum, or Mars Violet, warmed, when desired by Neutral Orange or Burnt Sienna, or cooled by any of the delicate blues, or Payne's Gray, is a fine tint for shades and shadows on sandy, gravelly soil or roads. Over this gray the markings of ruts or other inequalities are well given with Vandyke Brown, or a transparent maroon. Brown Ochre, Raw Umber, or the light tints of Mars Orange, thinly mixed with white, make a good color for sandy or gravelly soils in sunlight. The several grades of Sepia, also make good shadows, when made warm or cool, as may be required. For cast shadows in bright sunlight, at the immediate front, transparent grays, maroons and browns, may be used, and the strong markings in cobbles, fissures of stone, and general outlines be given with Vandyke Brown, Sepia, Indian Red, Burnt Carmine or Lake.

While the foregoing divisions on the specialties of color, will be found sufficient to guide the learner in landscape, in his first efforts, it is recommended that he should not confine

himself to the colors mentioned, or to any other published list of color combinations. Knowing the leading characteristics of his pigments, he can experiment in mixtures, and make notes of such as seem desirable. Begin with the combinations of green, then purple, and orange; from these, pass to browns and grays, bearing in mind the prime law, that the transparent colors give the best results in all mixtures. If the desired end can be reached by two pigments, the color will be clearer than if produced with three; but beyond a tertiary tint, it is seldom safe to go; as danger from heaviness comes rapidly as the mixture becomes more complex.

The first essays in color, may be made from approved copies, but when skill and confidence begin to appear, nature will be the best teacher. In the studies of color from nature, carefully observe the delicate changes in the greens and purples, arising from atmospheric influence. The lights on foliage near enough to distinguish the leaves, will often be cold, and the color quite blue; this effect will be reached best by the addition of a small quantity of white. In the minute changes of color over a whole scene, it is often desirable to generalize color as well as form; and it will be found a good plan, after the outline is secured, to note down a comprehensive method of proceeding, including light and shade, color and texture. This will beget a methodical effective manner of working, and deliver the student from the mistakes that arise from blindly following impulse.

TEXTURE AND MARKINGS IN FOREGROUNDS.

This is a division of the art of water-color painting, that is quite neglected, both by writers on the art and practical teachers. The artist, after laying in the general washed tints of the distance, is prone to continue the same movement of the brush in the complex markings and textures of the foreground.

Texture of surface may be obtained by *blotting, hatching, stippling, dragging and scumbling.* If the paper is quite damp, color blotted, or laid on, will spread or radiate from the point of contact, and assume forms that suggest a maze of tangled weeds and grasses. Hatching, or repeated strokes of the brush, crossed at different angles, gives texture, more or less, as the color is pale or deep, and applied in lines of greater or less intricacy. Stippling gives texture by dots or short strokes of color. Scumbling, is the use of opaque color thickly with a stiff brush, and is the opposite of glazing, giving the appearance of mystery, by a fine film of minute particles of harmonious color.

The process technically termed "dragging" is an excellent mode of giving texture; it is done by the brush charged in quite a dry state with color, and holding the handle at a very acute angle with the paper, drawing the brush sidewise with a rapid movement. For this purpose soft hog-hair brushes are best, and white added to the color, often improves it. On rough paper, the granulation receives an irregularly stippled appearance, that constitutes a very good representation of rough, gravelly ground.

French water-color paintings, often have the fault of blotted foregrounds, very hastily dashed in, and it is frequently maintained by art critics that this characteristic, is the true idea of the art; that it is simply suggestive, and all attempts at fine detail is labor lost, or worse than lost. The best answer to this, will be found in the works of some of the best English water-colorists, whose discipline in drawing in monochrome for engravers, has given them power in foreground detail.

The parts of all objects, where texture is most apparent, is where light separates from shade or shadow. If this separation be gradual as on a round object, the texture does not show in full power, but if the transition be sudden, as at the edge of a shadow on grass, the full roughness of the surface is realized. In the highest light or in shade and shadow, very little of this texture of surface is seen.

Objects not having this quality, as smooth, metallic or polished bodies, especially those cylindrical, generally show the quality of their surface by brilliant detached lights, but the character of most surfaces is manifested by more or less roughness.

To secure this texture on foreground objects, in pure Aquarelles, resort is often had to scraping with a knife, and to clear fine strokes with the brush, or pen. The last mentioned is very effective in skillful hands, particularly in landscape foregrounds, using color in the same manner as writing ink. Reed or quill pens are preferred.

Small patches of grass or weeds, relieved against a dark ground, may be effectively marked by placing the dark color on thickly with a brush or palette knife, and rapidly scratching

with a knife blade, the forms desired. If a little glycerine or white of egg, is mixed with the color, to retard its drying, large patches of intricate weeds can be thus brilliantly marked with a knife. If necessary the forms can be afterwards tinted with an appropriate color.

In the opaque method of coloring, solid lights and brush markings with impasto color are very effective, especially on paper of tolerably smooth surface. In whatever manner texture is secured, the pupil is advised to give the subject much attention. Ordinarily, the same movement of the brush or pen is necessary, as with the pencil in sketching. Care should be taken to avoid conventionality of line, or a careless style. Excellent instruction is given on this point in Harding's Elementary Art, to which the reader is referred not only for this subject, but also for valuable suggestions on outline composition, and light and shade.

Sketching from Nature in Water Color.

SKETCHING FROM NATURE.

MATERIALS.

The best form in which to arrange paper for drawing from nature in water colors, is the sketching block, and the kind having one edge of the paper fastened permanently, like the leaves of a book, is preferable as it combines all of the advantages of the common block and sketch book.

These blocks usually have thirty-two sheets, and are generally made from imperial size papers, the kind commonly used for studies in color; but a more expensive article made from extra thick papers, with a less number of sheets, is in demand for elaborate studies. The block should not be too small, 7x10 inches being a very suitable size for the first efforts of beginners, and for such use, the paper should be quite smooth. No dampening of the surface is needed for drawings of foreground plants, and similar subjects, but when skies or other large tints are to be washed in, a slight moistening of the sheet will assist in laying smooth washes.

A sketching stool, umbrella, pencils, rubber, brushes, colors, palette, and water cup, constitute the remaining articles necessary. A broad glass bottle with large aperture, tied at some convenient point, is a very good article to contain the water.

The form of pigments is not essential, but the moist pan colors or tube colors are preferred, as those made in cake form are liable to be broken or lost.

SELECTION OF SUBJECTS.

A bright clear day should be chosen for out-door studies, but the middle of the day in the warm season is generally avoided, as the sun at that time, is too nearly overhead to cast much shadow. A good teacher should always be had if possible, but in the absence of such help, an intelligent and painstaking pupil will accomplish much.

It is well to select for sketching, several subjects in advance, and for a tyro, they should be simple, such as single shrubs, a group of weeds, wild flowers, or an old building. Extended views of landscape should be attempted only when some advance has been made in study.

Having considered the position of the chosen subjects, with regard to the appearance of lights, shades and shadows at different hours of the day, the artist is prepared to choose such as will best accord with his convenience in time and study. The position of the sketcher should be chosen with the sun nearly behind the back, preferably casting the rays obliquely over the left shoulder, thus throwing the shadows to the right of the object, and dividing its surface in light and shade. The station in front of a small object, as a clump of weeds, may be ten or fifteen feet distant; but for larger subjects, the distance must be proportioned to their magnitude; yet in all, the eye without movement of its position should be able to take in the entire object.

It is a help to an inexperienced sketcher, to cut out of a cardboard or stiff paper, a square or form, corresponding to the shape of the proposed sketch, and holding it at a distance from the eye, to enclose as in a frame, at the commencement of his task as much of the view as may be desired. It will also be helpful in a sketch of foreground plants, or wild flowers, to place gray drapery back of them, that the eye may not be confused with the intricacies of lines of grasses, etc., and the shadows made more clear and definite. These devices will serve to simplify the process of sketching, until the pupil has gained the skill and experience to proceed without them.

THE OUTLINE.

Every sketch in color from nature, should be outlined, shaded, and colored by a well understood method. To help in forming such effective mental habits of procedure, it is well in the first attempts, to draw a delicate perpendicular and a horizontal line, dividing the paper into four equal parts; then having decided upon the height and width of the proposed sketch, and marked the limits by dots on the lines, you have a geometrical base of operations. If the subject is a group of two or three tall foreground weeds, by holding the pencil vertically before the eye and observing the angle the stems form with the straight line, you are prepared to mark on the paper, by the help of your ruled lines, the stems in the same relative positions. This will give you the length and inclined position of the stems, and as these are the lines of the greatest magnitude, they will, if correctly drawn, be a standard of comparison for all others. Next proceed with the lateral

leaves or branches, beginning with the largest, and determining their angle with the vertical or horizontal line already mentioned, by holding the pencil before the eye horizontally or vertically and sighting by it to the several parts. Draw these elementary lines delicately, with a sharp and tolerably hard pencil, giving stronger markings for the *lower* outline of objects, than for the *upper* surface where the sun illuminates it strongly. No shading with the pencil is required, for outlines of sketches in water color.

If the object sketched be large, as a tree near by, it is well, after having determined the height and angle of the trunk, to draw boundary lines by angular forms, limiting the extent of the branches. This will often save erasure, in correcting errors of proportion.

For very near or adjacent objects, of simple character, the detail in outline may be carefully made out; but if the subject be one of multitudinous forms, dots or slight lines indicating the general shape of the intricate parts may be sufficient to allow painting in the forms at once. Distant parts require only their outline faintly given. If forms of foreground grass be added, it may be well to apply the local color at once in a general wash to the parts, leaving the markings of texture and direction of the blades for the finishing process. The forms of grass when well grown, and swayed in different directions by the wind or other causes, give a very rich and effective foreground to a sketch. These shapes will be found to be indicated by dots and lines of every conceivable form and size. As skill is acquired, the pen, with diluted neutral color, or Indelible Brown Ink, may be employed instead of the lead

pencil for outlines, as these materials are much less liable to smut or defile in the after-working of the color.

COLORING AND FINISHING.

Coloring from nature should not be attempted until some degree of skill is acquired in outlining and shading with the lead pencil, for many difficulties encountered at the same time, lead to discouragement, and a careless, slovenly execution. Foregrounds test the color-acquirements of the artist, more severely than the flat smooth washes of the distance; for here we have occasion for broken tints and pure colors of every hue and quality. But these complex effects need not be attempted by the beginner; let the coloring be modest, and its strength confined to the simple subject, keeping subordinate and sketchy, the surrounding parts.

After the outline is completed, observe well the lights, shades, and shadows of the subject; noticing particularly their forms, relative size, and intensity, and the blended or abrupt transitions by which they separate from the surrounding parts. Notice if the general relief of the objects is dark against a light distance, or light against a dark background; or it may be, a combination of these two methods of relief or separation. The first of these, conduces to solidity of effect, and the last to a cheerful sentiment.

It will usually be found, that if the lights are of a cool color, the shades and shadows will from contrast appear warm; and the converse will hold good, if the lights are warm, the shades and shadows will seem cool. This law holds in general color, as may be noticed in the orange hue of lights

in sunsets, being contrasted with bluish or purple-gray shades and shadows.

As the first step with color, a very light wash of Neutral Orange, may be given over the whole picture; when dry, this will serve to fix the outline from rubbing, and subdue the crude whiteness of the paper.

In washes of different colors, slight variations of treatment are sometimes necessary to produce the best results. Thus, the elasticity of the brush, the granulation of the paper, the quantity of color used, and the angle at which the brush is held, will often determine the result as successful or indifferent. Vermilion washes are much clearer, if the brush is held perpendicular to the paper, than if held at the usual angle of the pen. The varied chemical constitution of the pigments, and the different amount and kinds of gums used in them, as well as the various methods of preparation, constitute subtile differences, that require adaptation in the applying of color.

Different subjects require such diverse treatment in coloring, that general truths only can be given to the pupil for guidance, leaving the application principally to his judgment. Presuming that the subject is one of simple form in foreground vegetation, we may lay in the shades and shadows, beginning with the largest forms. A good mixture for this, can be made of Bistre and French Blue, if near in the front; Payne's Gray and Sepia, or Sepia and Cobalt Blue if the parts are more distant. If these tints are laid at once in their required strength, they will be much purer than if reached by successive washes, for heaviness or opacity result by the latter process.

All broad lights should be left untouched, but small lights may be ignored and covered with the shadow tint, to be afterwards recovered with thick Chinese White, washed, when dry, with the required tint; or by methods of erasure mentioned on previous pages. Naples Yellow may also be used, laid on thick from the tube, to represent sharp foliage lights. The broad lights left, may be worked up with color, in finishing.

Too much green is generally used in landscape studies, until the artist is so trained in color, that he can distinguish between the positive greens and bluish grays or greenish grays, that are generally dominant. The positive greens, should be used generally in lights, as focusing color to the mass of semi-neutral or greenish grays of the sketch.

A good green for the lights in foreground foliage is made of Indigo and Indian Yellow, with a trace of Burnt Sienna. If the foliage be somewhat distant, a shade color for the foregoing mixture can be made of Cobalt, with Light Red and a little Aureolin. If the lights are very bright, greens of brilliant character, can be made of New Blue, or Antwerp Blue, combined with Gamboge, Indian Yellow or Aureolin.

If the sketch has trees as its subject, the trunks, branches, and twigs, should be carefully studied. The best season to get this knowledge, is after the leaves have fallen in autumn.

In "Penley's Water Color," it is recommended to observe the following characteristics of trees:

"The outward form.

"The direction, and interstices of the branches.

"Whether the limbs are angular or curved.

"The character of the main stem.

"Whether the trunk divides into several limbs near the base, or at a great height from the ground.

"Whether the bark is smooth or rough.

"Whether it peels off around the tree, or down the trunk.

"The color of the trunk, whether neutral gray or a gray of green, brown, or red hue.

"The color of the foliage, both of the upper and underside, in light and shade.

"The construction of the leaf, as to size and shape.

"The general luxuriance of the tree with its height and bulk."

The method followed by many water color artists in painting trees, is, first to lay in the general local color; upon this, when dry, give the forms of shade with the appropriate tint; then take out the high lights by wetting the forms with pure water, and rubbing with bread crumbs or Indian rubber. As the last step, paint in the trunk and branches, and carefully revise the form, especially the exterior of the masses of foliage.

A good general color for tree trunks, is a mixture of Sepia and Cobalt in different proportions for the distance; or Payne's Gray and Burnt Sienna, Payne's Gray and Light Red, or Vandyke Brown and Ultramarine for foregrounds. The sharp markings for texture in the bark may be given with Vandyke Brown, Burnt Carmine or some of the cochineal lakes.

If the sketch includes much foreground, shadow may be required to cover a part, in order to focus the lights to some point of interest; in which contingency, wash the shadow in,

broadly, with a delicate gray of the required hue and depth, and on this, when dry or nearly dry, mark in as much of the texture, with quiet green, or other suitable color, as the part will allow. All fissures in stones, or ruts in roads, may be marked with warm transparent color.

In rough, pasture foregrounds, patches of purplish ferns may be effectively added to the mossy greens around and on the rocks. These purples may be washed in on touches of white, laid on dark grounds, or painted in with impasto color. Rich effects of moss and lichens can be produced by a mixture of Sepia and Indian Yellow, or with Lake, Indigo, Vandyke Brown, Olive Green, Brown Pink and Sap Green, pure, and in various combinations. Some artists dissolve a small lump of sugar in the water-cup, when using foreground color; this retards the drying of the tints, and assists in taking out crisp lights with the knife, or by other methods mentioned, but the solution will not allow washing over the parts with other color.

For foreground roads, Yellow Ochre or Burnt Sienna with a little Cobalt, form a good compound for the lights; Vandyke Brown and Yellow Ochre is also useful for the same purpose. Caput Mortuum, washed on an underlying color of Cobalt or Payne's Gray, gives a good shadow color for roads; and the same overlaying color warmed with Neutral Orange, answers for warm, sandy parts, near the front.

If the sky should be included in the sketch, it should be washed in before the other parts, and the artist is reminded of the truth heretofore mentioned, that the color, if laid on in one wash, will be more pure, than if produced by

successive layers, and this purity and brilliancy will be well adapted to bright, sunny effects. But if the atmosphere is hazy, repeated washes alternated with pure water applied with a brush, will best represent its softness.

The first sky wash, may be given with a camel's hair, red sable or ox hair brush, but subsequent layers should be made with very soft camel's hair, as it is less liable to wash up the underlying color.

In coloring shaded clouds, especially large forms, the paper should be slightly damp, and the color used very dilute; and in the cumulus cloud, pure water may be used at the top, adding the color carefully, that the shade may be evenly graduated. Small lights are generally best produced in sky color, by wetting it, and rubbing out the forms with bread crumbs, while the shapes are still slightly moist.

In large paintings, if the paper is thick and substantial, half lights and blending of sky tints can be produced by the finest sandpaper. The surface should be dry, and the sandpaper, or glasspaper, made quite smooth by rubbing on pumice-stone; the granulation thus produced on the paper, gives a pleasing atmospheric effect, especially on skies of a stormy character. A smooth piece of pumice-stone is used with effect to subdue color, and gives good results, if the paper be quite dry.

Ultramarine thinly glazed over a Cobalt sky, enhances the richness of the tone. Cobalt with a little Indigo and Rose Madder, is an excellent sky color for ordinary effects of daylight; for moonlight, the mass of color may be a mixture of

Payne's Gray, Vandyke Brown, and Lake, with a combination of Blue Black and French Blue for clouds.

Suggestions for painting ordinary effects of water, have been given on a previous page, but a few directions may here be added, for foreground sketches.

In the clear water of brooks in the foreground, pebbles and other forms may be defined by some warm transparent color washed between them; over the portions represented as under water, carry a wash of Indigo and Brown Pink, or Vandyke Brown, and while the color is moist, a few touches of some pure color, as the parts may require, will spread and blend together. When dry, a few lights scratched horizontally, will give the effect of transparent water.

Reflections in still water, should be painted with nearly the same hue as the objects casting them, generally with a downward movement of the brush, but with color thin and transparent, generalizing the forms; afterward washing the surface with pure water in the brush, to further blend all harshness in the edges. Ripples, or horizontal films of light, produced by means already described, will give the surface the character of a fluid.

For water slightly agitated by the wind, paint the mass in broadly, and depend upon dampening, and taking out color, to give the half lights, representing the rippled surface. Larger waves in the front, may have the forms painted in detail. Vandyke Brown, Bistre, Raw and Burnt Sienna, in connection with Intense Blue, Payne's Gray and Indigo, are useful in varied proportions for the nearest water in marine views;

while Payne's Gray, French Blue and Indigo, may prevail in the middle distance, and Cobalt on the horizon.

If Sepia and Indigo are used in the distance in mixed tints, the tone should be light, as both of these colors incline to heaviness when used in strength. A minute quantity of Indigo is often added to Cobalt, for skies, and distances in water and mountains.

The detail in distances, apparently obscured, will often be found by close observation to show delicate markings; these can be well indicated if they are put in with a fine pointed brush, quite dry, and worked while the mass of color is somewhat moist.

In all distances, it is important that color of proper retiring quality and hue be washed in at once, as the tint, if given in too great warmth, or in advancing quality, cannot have its aerial transparency recovered in purity by any after-working. Purplish distances may sometimes be seen in sunsets, but the general color of the distance in ordinary daylight, will be found to be a delicate, pearly gray. This color, while being worked on its appropriate place, may often be carried with advantage, as an underlying tint, over the middle distance, and even into parts of the foreground. The good results of this use of gray as an underlying tone, are best seen if the paper has a slight absorbency; and this condition is produced in the hardest of Whatman's papers, by a slight dampening, as it is found in Harding's papers in their dry state.

Clear and pure air tones are in a great measure dependent on the proper granulation and absorbency of the paper.

These qualities of tone may be well produced in distant foliage by first painting it in a delicate gray tint, and glazing it up to a greenish hue by a thin wash of Aureolin or Raw Sienna.

OLD BUILDINGS.

If old, unpainted buildings are introduced in the foreground of a sketch, their hues may be well imitated by the following mixtures:

Lamp-Black and Yellow Ochre, or Neutral Tint and Burnt Sienna, for lights; Payne's Gray and Light Red, or Payne's Gray and Yellow Ochre, for shades and shadows.

These couplets of color will answer for old fences, and some varieties of weather-stained rocks.

Atmospheric colors should not be used on the lights, and a little white will often improve the mixture.

THE HUMAN FIGURE IN LANDSCAPES.

Figures should generally be omitted in landscapes, where the interest centers in their romantic character, unless needed to express ideas of the relative magnitude of parts. If figures are introduced, the principal interest should usually be given to the scene; as, if the figures are made equally prominent in value with their surroundings, one of the first laws of composition is violated. Figure-drawing is of the first importance to a landscape artist; refinement of perception in drawing the human form, leading more directly than by any other path, to an appreciation of truth in landscape practice. It therefore, is of advantage to the landscape painter, to see that while studying inanimate nature,

figure painting has its due attention. The value of figures in giving points of bright color, and animation to a sketch, can hardly be overvalued if the subject is one in which their introduction is advisable.

ANIMALS IN SKETCHES.

The following mixtures will be found valuable in painting horses and cattle:

Bay Color.—Burnt Sienna and Brown Madder, Indian Red and Rubens' Madder, Vandyke Brown and Madder Lake.

Dark Bay.—Vandyke Brown and Lake, Vandyke Brown and Purple Madder, Roman Brown and Sepia, Persian Red and Brown Madder, Sepia and Indian Red.

Shades and Shadows.—Payne's Gray and Purple Madder, Caput Mortuum and Lake.

Gum water may be used to advantage, on foreground figures of horses and cattle.

In closing these pages, we give a few paragraphs, detached and fragmentary in their arrangement, but which it is hoped will be found useful to the learner.

To prevent undue flowing of color when working the details of foreground foliage, use water-color megilp. By its mixture with the color, lights can be more readily taken out, and while its use tends to dull the color, the brilliancy may be recovered by glazing.

Boats with black hulls, may be painted with Blue Black, warmed with Brown Madder or Burnt Sienna. Vandyke

Brown, Burnt Sienna and Emerald Green, may be used pure on buoys, stripes on boats, &c.

In using color in landscape practice, it is well to begin with the pure and rich tones of the several parts, as, if desired, their brilliancy can be subdued more readily, than dull tones can be made richer.

In working details, bring the brush to a point and regulate the amount of color, by drawing it over a damp cloth, sponge or blotting paper.

Experimental studies in color from nature, may sometimes be made to advantage on thin paper, if it is desirable to trace from it to the thick paper for the finished drawing.

The shades and shadows on the folds of dark, cool-colored drapery, may usually be given with a preponderance of warm color, as Madder Brown, or a similar transparent pigment; while drapery of a warm color, will often have cool or gray shades and shadows. The modification of shades and shadows, as above, will of course depend largely on the dominant-colored light.

If the warm primaries, red and yellow, are to be separated, black is the best intervening agent; if the cool primary blue is to be opposed to one of the warm primaries, white may be the best separating medium. If white or black

would constitute too brilliant a contrast, a gray of warm or cool cast, as would best harmonize the parts, is preferable.

Yellow being a primary of rather retiring character, it has, when placed near orange, less discordance than red; yellow would also, for the same reason, be more harmonious with green, than would red with violet.

When two secondaries are brought near each other, a separating medium may be desirable; thus orange and green may have black for this purpose; orange and violet may have gray; while violet and green, being cool colors, would be best separated by white.

In warm, dry weather, moist color in pans is liable, without care, to dry and crack. When not in use, a damp cloth may be laid over them; yet, if this is long continued with the box closed, the pigments will be injured by excessive moisture, and the white enamel of the covers will scale off. An effective remedy, is a single thickness of cloth, slightly moist, placed on a sheet of tin and enclosed under the upper cover. When color in moist pans becomes much soiled, it can be readily cleaned by shaking the pans under water, color downward, and afterwards absorbing the superfluous water with a brush.

If a background requires a very deep tone, it is well to take the sizing quite out of the paper at such point, by sponging or washing; otherwise the large amount of color required will be liable to give the surface a smeared or soiled hue.

Soft-colored crayons can be used to experiment in introducing some desired strong point of shade or color; the crayon being easily removable by the handkerchief and bread crumbs.

When colors are mixed by superimposing one layer on another, the color of warmest hue should generally be washed first, as, Light Red under Cobalt.

The influence of sunlight at different hours of the day, in modifying color is well known; thus with a dominant-colored light, as the red or yellow ray of sunset, green vegetation often takes a reddish or maroon hue; brown assumes a yellowish cast, etc.

Dry, powdered color mixed by the palette knife, with a thin solution of alcohol and white lac, will sometimes be found useful in alterations or bold markings of foreground. This device will often give results corresponding to markings with thick oil colors.

When Indian Ink is long kept in a liquid state, it may become worthless from the decomposition of the gelatine which it contains. A little glycerine added, acts as a preservative, and gives the ink a good flowing quality. Too much glycerine, will interfere with the drying qualities of the ink, and of course render it more liable to be smeared.

Pigments, either in cake or moist form, should not be left in sunlight. Some colors have a viscid nature, as Yellow

Lake, Italian Pink and the Madders; and strong sunlight, if long continued, renders such pigments hard, and the normal fullness of the color cannot be obtained from them. Colormen should therefore be careful of long exposure of colorboxes in shop windows.

Every pigment may be reducible to three scales. *First*, its reduced scale, or descending from its normal fullness, to its palest condition. *Second*, its darkened scale, or the color concentrated from its brightest state to a pasty condition. *Third*, its dulled scale, or the color mixed in various degrees with grays.

The opposition of deep and light tones of the complementary colors, produces the most effective contrasts; thus, light tones of yellow opposed to deep tones of violet, or light tones of red with deep tones of green, etc.

If we mix two colors—having neither in excess—more than a thousand binary combination greens and greenish grays can be formed from the yellow, orange, brown, blue, and gray pigments, now used in the water medium; this includes among the grays, the blacks in diluted form. These mixtures, requiring only two pigments, have generally great clearness.

When we consider, aside from the above, the subtile variations of which these mixtures are capable by the domination of either component, we can understand the power in these hues at the command of the artist; and aside from these, we

must add the greens uncombined, made directly from mineral, vegetable and animal products by the colorman, and the variety at command by tertiary combinations of pigments. What is thus true of green and greenish-gray hues, is true of other combinations of color in a greater or less degree. The number of pigments included in the binary mixtures mentioned on the preceding page, are approximately as follows:

Yellows, 20;
Orange, 8;
Browns, 15;
Blues, 16;
Grays, 8.

The season most favorable for studying color in landscape from nature, may be found from a month to two months previous to the close of the autumnal season. The richness and variety of color in the foliage of America at this season, are probably not exceeded by any other latitude.

If water-color paper has much granulation of surface, texture on sandy or gravelly ground can be well represented by damp wash-leather or linen, wrapped around the finger, and drawn briskly over the dried color.

Studies from nature should not be worked up in the studio; their value consists in the freshness of nature observable in every touch, and all subsequent finishing away from the scene, is sure to degenerate them in parts. If the

study is to be reproduced in a larger work, the full depth and purpose of each color should be realized, as the tones will be of assistance in determining the strength of color for the finished picture. Studies of foreground plants, rocks, etc., are of great value for reference, or introduction in finished works, and all such sketches should be carefully preserved.

Rays of light, when the sun is obscured by a dark cloud, may be represented by the following means: dampen the sky tint, and placing a piece of paper on the surface, cut to the form of the ray, reduce the tone as desired, by the use of bread crumbs.

One of the best helps to the young water-colorist, is a drawing book, in which is washed a small pattern or sample of each pigment in his box, given in the form of a graduated tone, together with examples of the most useful combination greens, purples and grays. A good arrangement is, to begin with the pigments approaching nearest to the primaries, red, yellow and blue, classifying them, and graduating the tone from the most delicate at the top, to the deepest at the bottom. The form need not be more than three or four inches in length, by an inch in width. After the colors related to the primaries, take the green, violet and orange pigments, then the grays and browns manufactured by the colormen. This will include the whole range of the color box, if black be classed with the grays. Next, begin with the most useful combination greens,* commencing the list with Intense Blue

* See examples of combination greens, &c., on colored diagram, Plate 2, for manner of washing the color.

and Gallstone, which make probably the strongest and most intense green mixed on the palette. From this, proceed with mixtures through the transparent blues and yellows, blues and browns; then combine the grays and browns, and grays and yellows; then both grays and blues with the orange pigments; these last give very sober semi-neutral mixtures. The form of these combination-green washes, should be about the same as that from the box colors, and one end should show the pure yellow, brown, or orange, and the other the pure blue or gray; the intermediate color, of course, representing grades of the union of the two. These combinations, with command of all the pigments above mentioned, found in the preceding pages, could be carried up to several hundred; but, if the pupil should secure fifty or a hundred, of the most useful, he will find himself amply repaid, in the discipline he will acquire in color, and in the ready reference he will have in any doubt, as to the green he requires. As this plan only requires two pigments in each mixture, the whole will be found to give very pure and valuable combinations.

The amount of color taken up, together with the size of the brush for washing a given space, are of great account in practice, as it will be found if the brush is too full for the space to be washed, a blotted spot will be likely to disturb the flatness of the tint; this defect will be found quite difficult to remedy; and the evenness of the color can be recovered only by careful hatching with a brush nearly dry.

If a drop of color should by accident, fall on the paper, it should be quickly absorbed by a sponge, or clean moist brush; but sometimes the injury occurs on a finished part, and then it may be best to let it dry, afterwards neatly scraping it off and hatching the spot with a fine brush and suitable color. Other accidents, as bruises or scratches, may be remedied by dampening the surface, rubbing the color off through an opening cut in a slip of paper, and then coloring up the light spot by hatching or stippling.

In flower painting, it is an excellent practice to draw from an uncut flower, placing the pot near a strong light at a window, where the illumination will throw a shadow from it obliquely, on a gray cloth or paper screen behind it. If the flower is detached from the plant, it may be placed in a small vial of water, and the stalk pinned to a gray paper on an upright board; the light, as before, striking the plain background obliquely. These studies will be more easily drawn by the pupil, if the light is quite brilliant, giving strong shadows.

Where one has a valuable collection of brushes, their protection from moths in warm weather, is an important consideration. A tight brush-box, containing an open letter envelope filled with gum camphor, will effectually keep the brushes from injury.

In the first stages of a picture, it is well to have the colors slightly warmer than will ultimately be required, as the tone

may be more easily made cooler—by blue—than warmer upon a cool ground.

Paint in shades and shadows first, of the required strength, if possible; and afterwards the local color and intensity of the lights can more easily be determined.

The shaded side of warm-colored foreground objects, may be given with a cooler and somewhat paler color than required, and afterwards glazed up to the required hue by some of the warm transparent pigments.

All colors are dependent for the full strength of their powers, upon contrast.

One of the primary colors is cool; two are warm. As a general law, a picture composed with colors thus related, will be pleasing if the sentiment of the subject will allow of such generalization.

In shading red or yellow objects, in the foreground, advantage may be taken of natural maroon or brown pigments for shades, as the addition of grays to give depth to such shades, is attended with danger of defilement.

In color mixtures, begin with the dominant color, adding the others to it.

Transparency is the quality most wanted in shades and shadows, as opacity or reflecting power is wanted in the lights.

The most powerful effect of transparent color, is found in glazing it over white. Rubens regarded white as a nourisher of light, and the poison of shade and shadow.

Fugitive colors are usually transparent, and of good working and combining qualities; they can often be used in thick body, with good effect, in shades and shadows of foregrounds. Their greatest stability is found when used in their deepest color; and this quality is farther increased, if gum or some gelatinous vehicle is added.

A discordant effect is produced when a secondary color is placed unsupported, contiguous to either of its components, as orange with either red or yellow; violet with red or blue; green with blue or yellow. In nature, some instances will be found, where the foregoing appears to be disproved, but by close examination it will be usually found that what seemed a secondary or primary, is a modification of these colors, and the harmony observable, is due to such condition. Discordant colors are most offensive to the eye, when unsupported by harmonizing adjacent color.

Glazing color should be permanent in character, as fugitive pigments fade more readily in a glaze, than when used in any other form.

Field says, "A picture should, according to its sentiment, comprise a combination of neutral, semi-neutral grays, and pure color; the balance of neutrality and color, being as

necessary as the balance of light and shade." Barnard observes, "In a pictorial composition, color may be used to balance form, and light and shade."

Secondary and tertiary hues in a picture, had best be formed from pigments that prevail in the work.

Pure white or black should not, in painting, be graduated from color, but stand detached by themselves, and in quantities relatively small, as compared with adjacent color.

Cobalt washes, tend to a greenish cast by time; they may, therefore, when laid, be modified with reference to this result.

Dark foreground rocks, when of a slaty color, can be represented with greater purity of tint, by simply using a wash of lamp-black or the same with purple madder, than with a mixed black or gray. Indeed, all foreground objects can with advantage, be colored with one pigment, if truthfulness to nature will allow it, rather than having resort to complex color.

Three kinds of white are used in water color; Flake White, Constant or Permanent White, and Chinese White. The last is most useful for general mixtures; but for high, brilliant lights, either of the former may be used, and covered by the latter. This arrangement may be followed, when the light is to be glazed with color.

Background colors for water-color portraits;

Cobalt, Light Red with a little Aureolin.
Roman Brown and Indigo.
Cobalt and Vandyke Brown.
Indigo and Brown Madder.
Burnt Sienna and Ultramarine.

After laying a general gray, wash lightly; the after-tints selected may be hatched in, occasionally using a little Ultramarine and Mars Orange, or Neutral Orange, pure, to give animation and strength to parts.

Pictures should not be hung where the direct rays of the sun may reach them. Though works in water-color, painted with the pigments marked permanent, are most reliable, care should be taken to keep valuable works from strong sun-light, gas, and foul air. Paintings in the water medium, can be effectually sealed from foul air and dust, by a sheet of tin foil, or a thin sheet of tin or other metal cemented carefully to the edge of the glass, before placing on the backboard. Most colors marked semi-stable, are quite permanent under favorable conditions—for example, Prussian Blue; washes of this color, used in the water medium, in the year 1814, have lost no perceptible strength or brilliancy. With care on the part of the artist and possessor, a good water color, on pure linen paper, is the most durable form of color in painting.

A frame of flat molding, preferably of pure gold leaf, giving the picture a wide margin of mat, is most suitable for water colors. Moldings of light-colored wood or veneer,

with gold beading or ornament, are quite well adapted to the purpose. Gold frames should always be handled with a handkerchief or soft gloves, and dusted with a dry soft cloth.

There are three general methods of execution in laying broad washes of color: 1st. Washing the pale color, and when the surface is sufficiently dry, adding the stronger tints. 2d. Laying the shades or deeper tints first, and washing the pale color over the whole; and 3d. Washing the pale and deep tints, and immediately uniting them at their edges, with a damp brush, while they are in a wet condition. The first of these methods is desirable where transparency and force are wanted—as in foregrounds; the second is useful where light tones prevail, and a hazy effect is desired—as in some distances; and the third is a good method in backgrounds for in-door scenes, and some conditions of diffused light.

In graduating sky tones, it is often best to go from the full color at the top to the pale at the horizon, as greater delicacy and evenness in the gradation can be secured in this way, especially by an unpracticed hand, than by the reverse method. If, however, the sky represents the warm glow of sunset or sunrise, the paper may be held reversed, with the sky downward, as the yellow or red hues are purer if laid first, and blended into the cooler color. (See page 80, division 2.)

The use of the sponge in water-color practice, should receive much attention. The best sponge has a fine, soft texture; it should be kept free from soap or oily substances; and, in a damp yet not wet state, be held in the left hand, for regulating the amount of color in the brush, or dabbing the surface of the picture to modulate, blend or remove color. It should be frequently washed, and the water well pressed out. The size may be small, and the cup-shaped is generally preferred.

In out-door sketching in a damp locality, a water-proof or oil-cloth mat, laid upon the ground, serves as a good safeguard from chills, and gives a dry surface upon which to lay materials. An extra sketching stool will serve as a table, whereon to place a water cup, brushes, &c.

Some of the advancing foreground colors lose their strong character and become retiring, when mixed with a small quantity of Chinese White.

Prussian Blue, Indian Yellow, the cochineal colors, or other pigments that stain deeply in washes, ought not to be employed pure in first tints, as they penetrate the paper, and make it difficult to wipe or scrape out any lights that may be required.

Carmine, and the cochineal colors generally, when used in strength, are better for foregrounds than the lighter madder colors, as they are more vigorous and advancing in hue.

For a moonlight scene or a marine view of dull, cool tone, the first wash may be a pale, cool gray over the outline, laid to a depth similar to that of the Neutral Orange or Venetian Red wash for ordinary warm effects.

In working foregrounds on damp paper, the color should, in many cases, be rather thick and the brush quite dry and elastic.

A collection of studies of skies and cloud effects should be made, as often a selection from these will be more desirable for a picture than the sky seen at the time of sketching the view from nature.

Naples Yellow, as now made by some colormen, is a combination of Cadmium Yellow (deep) and Zinc White; artists should therefore be cautious in mixtures with this color, to avoid using pigments having a lead base.

Cadmium Yellow and Chinese White give a color of great utility for high lights of foreground yellow objects.

When the primaries, secondaries or other strong hues are used as the local color of foreground objects, the shade or shadow color is generally rendered too bright and advancing. Though there can be no given formula for modifying these *shade colors* to suit the conditions of the light, the following mixtures will be found generally useful:

For *red* objects use Sepia with the lakes, in varied proportions; for *yellow*, use the Umbers, with or without

Sepia; for *blue*, the local color, with Brown Madder; for *brown*, the lakes, with Sepia or Cologne Earth; for *green*, the local color, dulled with the lakes, or deepened with the asphaltic colors (Vandyke Brown, Cassel Earth, Liquid Asphaltum), for the darkest parts; for *purple* or *violet*, use the local color, mixed with natural Sepia; for *Indigo* and *grays*, Crimson Lake and Sepia added to the local color; for *black*, Sepia and Lake, with a trace of French Blue,—or Intense Blue, Sepia and Purple Madder. The last combination is a most beautiful transparent black.

French Blue, dulled by a small addition of Burnt Umber, represents very closely the hue of Indigo, and can be employed for the latter color wherever absolute permanency of hue is wanted in foreground objects. Any of the artificial ultramarines, with Bistre, in varied proportions, give a charming variety of sober foreground hues, for dark foliage and grasses.

As a habit of careful and accurate observation of nature is a prime essential to all originality and progress in art, we cannot in closing these pages, too strongly recommend to the learner, the custom of keeping an art diary, in which may be sketched or written each day, such truths as he may observe in nature relating to *form*, *composition*, *light*, *shade*, *color* and *texture of surface*. These memoranda may be sketched in pencil, color, or written out, as may be convenient, but there must be *work* in them, for the artist who expects success by any other course, will find only disappointment.

COLORS COMMENDED TO THE STUDENT.

LANDSCAPE PAINTING.

(*For First Lessons.*)

Yellow Ochre.	Vandyke Brown.
Indian Yellow.	Bistre.
Venetian Red.	Cobalt.
Rose Madder.	French Blue.
Brown Madder.	Indigo.
Crimson Lake.	White.
Burnt Sienna.	Black.

(*For Advanced Practice.*)

Lemon Yellow.	Light Red.
Gamboge.	Indian Red.
Cadmium Yellow.	Sap Green.
Indian Yellow.	Oxide of Chromium.
Yellow Ochre.	Emerald Green.
Raw Umber.	Vandyke Brown.
Neutral Orange.	Bistre.
Cadmium Orange.	Payne's Gray.
Burnt Sienna.	Sepia.
Rose Madder.	Brown Pink.
Purple Madder.	Cobalt.
Brown Madder.	French Blue.
Vermilion.	Antwerp Blue.
Crimson Lake.	Indigo.
Indian Red.	Black.

FOR FLOWER PAINTING.

(*First Lessons.*)

Yellow Ochre.
Gamboge.
Neutral Orange.
Crimson Lake.
Vermilion.
Vandyke Brown.
Cobalt.
Antwerp Blue.
Indigo.
Sepia.
Black.
White.

(*Advanced Practice.*)

Lemon Yellow.
Yellow Ochre.
Gamboge.
Indian Yellow.
Burnt Sienna.
Brown Pink.
Light Red.
Carmine.
Crimson Lake.
Purple Lake.
Rose Madder.
Brown Madder.
Indigo.
French Blue.
Cobalt.
Oxide of Chromium.
Black.
White.

FOR FIGURE PAINTING.

(*First Studies.*)

Yellow Ochre.
Gamboge.
Light Red.
Crimson Lake.
Indian Red.
French Blue.
Sepia.
Vandyke Brown.
Cobalt Blue.
Indigo.
Black.
White.

(*For Studio Practice.*)

Lemon Yellow.
Gamboge.
Cadmium Yellow.
Yellow Ochre.
Light Red.
Venetian Red.
Vermilion.
Rose Madder.
Rubens' Madder.
Brown Madder.
Purple Lake.
Indian Red.
Crimson Lake.
Sepia.
Neutral Orange.
Chalon's Brown.
Mars Orange.
Brown Ochre.
Burnt Sienna.
Cobalt.
Ultramarine Ash.
French Blue.
Indigo.
Intense Blue.
Prussian Blue.
Neutral Tint.
Payne's Gray.
Raw Umber.
Burnt Umber.
Emerald Green.
Prussian Green.
Viridian.
Blue Black.
Ivory Black.

White.

F. W. DEVOE & CO.,

Cor. Fulton & William Sts., New York,

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ARTISTS' MATERIALS:

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ARTISTS' OIL COLORS IN TUBES;

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FINE BRUSHES FOR OIL AND WATER COLOR PAINTING,

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F. W. DEVOE & CO. are regularly supplied with the goods of WINSOR & NEWTON, of LONDON—Water Colors, Oil Colors in Tubes, Canvas, Papers, etc.—and with those of other English, French and German manufacturers.

Wooden and Paper Panels—Drawing Papers—Sketching Books and Blocks—Pencils—Mathematical Instruments—Charcoal and Crayon Drawing Materials—Illustrated Books on Art—Folding and Studio Easels—Drawing Boards—Studies—Manikins and Lay Figures—Out of Door Sketching Boxes—Sculptors' Tools, Modeling Wax and Clay.

Plaster Casts for Models—Tiles, with Materials for China and Tile Decoration—Wax Flower and Fruit Supplies—Colors, Tools, Moulds and Brushes.

MATERIALS NEEDED IN

WATER COLOR PAINTING

FROM THE CLASSIFIED INDEX OF

F. W. DEVOE & CO.'S

PRICED CATALOGUE OF ARTISTS' MATERIALS.

Brushes—Black Sable, Albata, F. W. D. & CO.'S.
Black Sable, French.
Camel Hair, Broad, Flat, F. W. D. & CO.'S.
Camel Hair, English, Flat.
Camel Hair, F. W. D. & CO.'S.
Camel Hair, Large, Round, F. W. D. & CO.'S.
Camel Hair, Wide, Flat, F. W. D. & CO.'S.
Red Sable, Albata, F. W. D. & CO.'S.
Red Sable, Broad, Flat, F. W. D. & CO.'S.
Red Sable, French.
Russian Sable, F. W. D. & CO.'S.
Siberian Fitch, F. W. D. & CO.'S.
Siberian, F. W. D. & CO.'S.
Siberian Wash, F. W. D. & CO.'S.
Pencils—Black Sable.
Black Sable Swan Quill, Miniature.
Camel Hair.
Camel Hair Swan Quill.
Camel Hair Swan Quill, Miniature.
Camel Hair Split Quills.
Red Sable.
Red Sable Swan Quill, Miniature.
Russian Sable.
Siberian Fitch.
Siberian.
Easels—Studio, Sketching & School.
Folding Easel and Seat.
Sketching Umbrellas.
Sketching Stools.
Drawing Boards.
Drawing Table—Adjustable.
Thumb Tacks.
Bristol Boards.
Drawing Papers.
Rice Paper.
Ivory Sheets for Miniatures.
Panels—Cardboard.
Sketch Blocks and Books.
Sketching Portfolios.
Studies and Copy Books.
Books on Art.
Portfolios.
Water Colors—Cakes.
Moist, in Pans.
Liquids.
India Inks—Cakes.
Liquids.
Japan Ink—Cakes.
Ox Gall—Liquid and Solid.
Gum Water.
Megilp.
Fixatif.
French Retouching Varnish.
Chinaware.
Water Glasses.
Palette Knives.
Lay Figures.
Manikins—Human.
Manikins—Horse—with or without Rider.
Lead Pencils.
India Rubber.
Handles for Quill Pencils.
Mahogany Boxes, Empty.
Japanned Tin Boxes, Empty.

LIST OF WATER COLORS

In Cakes, Pans and Tubes.

MADE BY WINSOR & NEWTON, LONDON.

"C,"—in Whole and Half Cakes.
"P,"—in Whole and Half Pans.
"T,"—in Tubes.
"C & P,"—in Whole and Half Cakes, and Whole and Half Pans.
"P & T," in Whole and Half Pans, and Tubes.
"C, P & T,"—in Whole and Half Cakes, Whole and Half Pans, and Tubes.

Antwerp Blue.....C., P. & T.
Aureolin.....C., P. & T.
Bistre.....C., P. & T.
Black Lead.....C.
Blue Black.....C., P. & T.
British Ink.....C.
Bronze.....C.
Brown Madder.....C., P. & T.
Brown Ochre.....C., P. & T.
Brown Pink.....C., P. & T.
Burnt Carmine.....C., P. & T.
Burnt Sienna.....C., P. & T.
Burnt Umber.....C., P. & T.
Cadmium, Orange.....C., P. & T.
Cadmium, Pale.....C., P. & T.
Cadmium Yellow.....C., P. & T.
Carmine.....C., P. & T.
Cerulean Blue.....C. & P.
Chalon's Brown.....C.
Chinese White.....C., P. & T.
Chrome Yellow.....C., P. & T.
Chrome Deep.....C., P. & T.
Chrome Orange.....C., P. & T.
Cobalt Blue.....C., P. & T.
Cologne Earth.....C. & P.
Constant White.....C.
Crimson Lake.....C., P. & T.
Dragon's Blood.....C.
Emerald Green.....C., P. & T.
Field's Orange Vermilion C. & P.
Flake White.....C.
French Blue.....C., P. & T.
Gallstone.....C., P. & T.
Gamboge.....C., P. & T.
Genuine Ultramarine...½ & ¼ C.
Hooker's Green, No. 1..C. & P.
Hooker's Green, No. 2..C. & P.
Indian Purple.....C., P. & T.
Indian Red.....C., P. & T.
Indian Yellow.....C., P. & T.
Indigo.....C., P. & T.
Intense Blue.....C. & P.
Italian Pink.....C., P. & T.
Ivory Black.....C., P. & T.
King's Yellow.....C.
Lamp Black.....C., P. & T.
Leitch's Blue.....P. & T.
Lemon Yellow.....C. & P.
Light Red.....C., P. & T.
Madder Carmine.....C.
Mars Orange.....C., P. & T.
Mars Yellow.....C., P. & T.

Mauve	P.
Naples Yellow	C., P. & T.
Neutral Orange	C., P. & T.
Neutral Tint	C., P. & T.
New Blue	C., P. & T.
Olive Green	C., P. & T.
Orange Vermilion	C., P. & T.
Oxide of Chromium	C., P. & T.
Payne's Grey	C., P. & T.
Pink Madder	C., P. & T.
Prussian Blue	C., P. & T.
Prussian Green	C., P. & T.
Pure Scarlet	C. & P.
Purple Lake	C., P. & T.
Purple Madder	C., P. & T.
Raw Sienna	C., P. & T.
Raw Umber	C., P. & T.
Red Lead	C.
Roman Ochre	C., P. & T.
Roman Sepia	C., P. & T.
Rose Madder	C., P. & T.
Rubens' Madder	C. & P.
Sap Green	C. & P.
Scarlet Lake	C., P. & T.
Scarlet Vermilion	C., P. & T.
Sepia	C., P. & T.
Smalt	C., P. & T.
Terre Verte	C., P. & T.
Ultramarine Ash	C., P. & T.
Vandyke Brown	C., P. & T.
Venetian Red	C., P. & T.
Verditer	C.
Vermilion	C., P. & T.
Violet Carmine	C., P. & T.
Viridian	C., P. & T.
Warm Sepia	C., P. & T.
Yellow Lake	C., P. & T.
Yellow Ochre	C., P. & T.

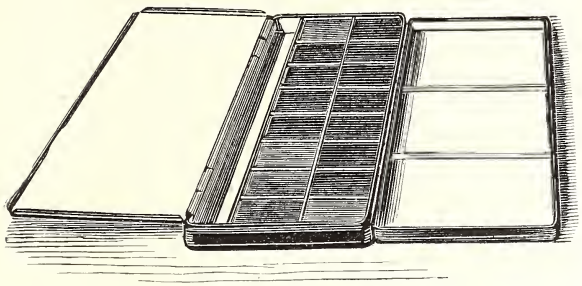
W. & N.'S PASTE AND LIQUID COLORS.

IN SMALL BOTTLES.

Permanent Chinese White	Paste.
Asphaltum	"
Indelible Brown Ink	Liquid.
Prout's Brown	"
Sepia	"
Indian Ink	"
Carmine	"

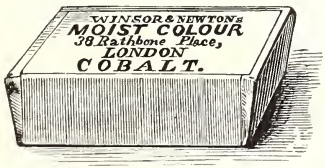
MOIST COLORS,—IN TUBES.

MOIST WATER COLORS.—HALF PAN.



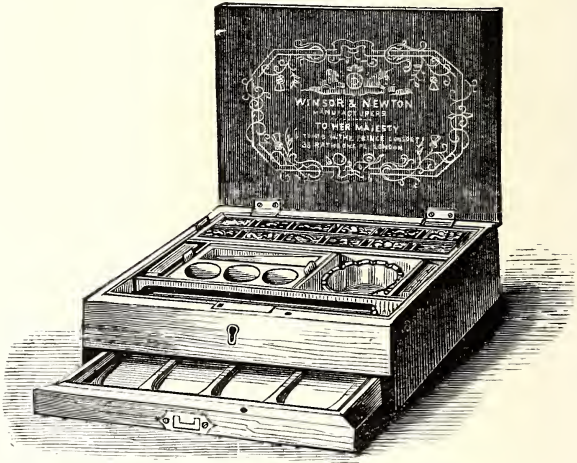
MOIST WATER COLORS IN JAPANNED TIN BOXES.

Each division made to hold one whole or two half pans.

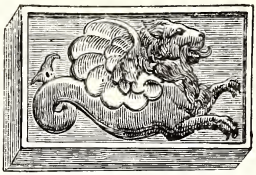


MOIST WATER COLORS.—WHOLE PAN.

WATER COLORS.—HALF CAKE.

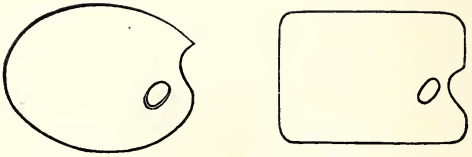


WATER COLORS.—IN BOXES.

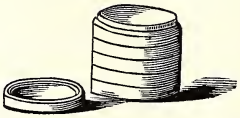


WATER COLORS.—WHOLE CAKE.

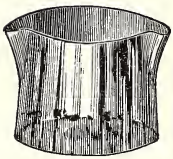
INDIA INK.



CHINA PALETTES.

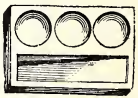


CABINET NESTS.

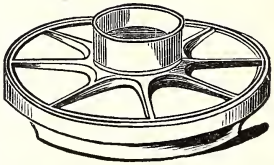


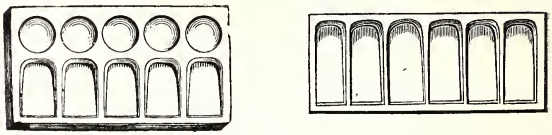
WATER GLASS.

TINTING SAUCER.

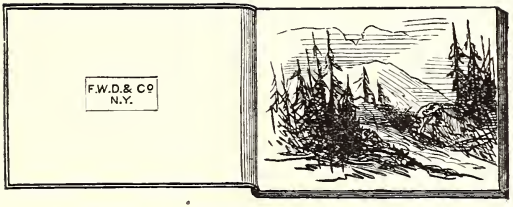


INDIA INK SLAB.

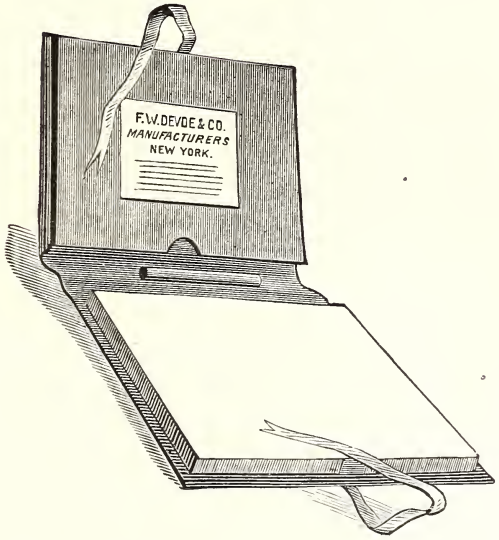




WELL SLABS.

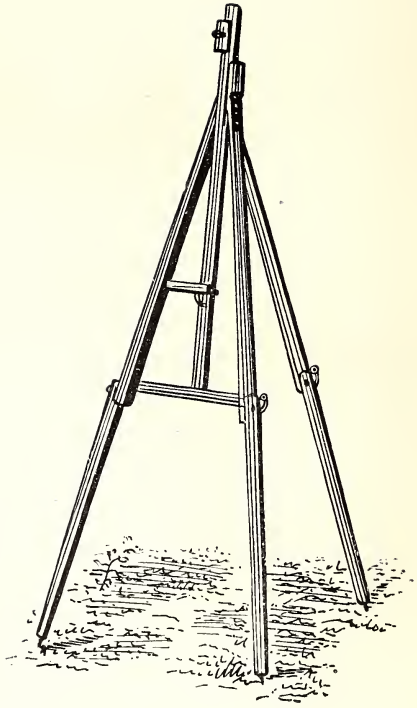


F. W. DEVOE & CO.'S SKETCH BOOKS.



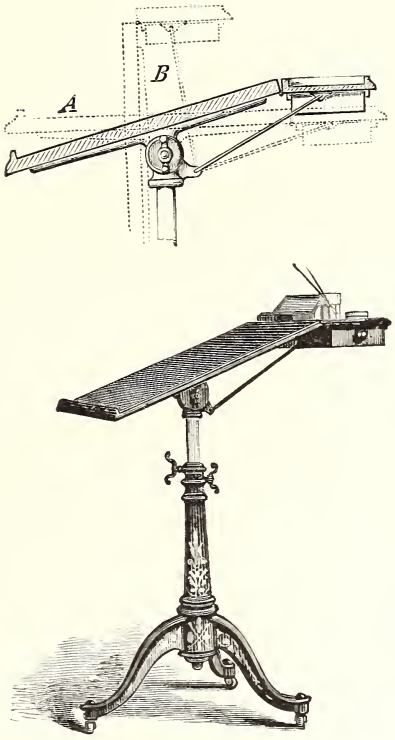
F. W. DEVOE & CO.'S SKETCH BLOCKS.

The Blocks are made of sheets of paper, pressed firmly together; and each sheet may be separated by passing a knife under its edge. The Bound Blocks have Leather backs and Cloth sides.



FOLDING SKETCHING EASEL.

See also drawings of Stools, Easels and Sketching Umbrella, on pages 29 and 30 of text.



ADJUSTABLE DRAWING TABLE—ON CASTORS.

This Table can be fixed at any convenient height, or placed at any angle. The shelf is attached to it by hinges, is always level, and the edge is protected by a ledge. This shelf is used for Colors, Brushes and Instruments, and beneath are two drawers for materials. The tripod, hollow standard and sliding spindle are of cast iron, neatly painted and bronzed. The working parts are well finished and very easily operated. The Table complete weighs 55 pounds, and is sufficiently firm to support a Drawing Board 44 inches square, without inconvenience. In the lowest position the Table is 30 inches high, and may be elevated to 44 inches.

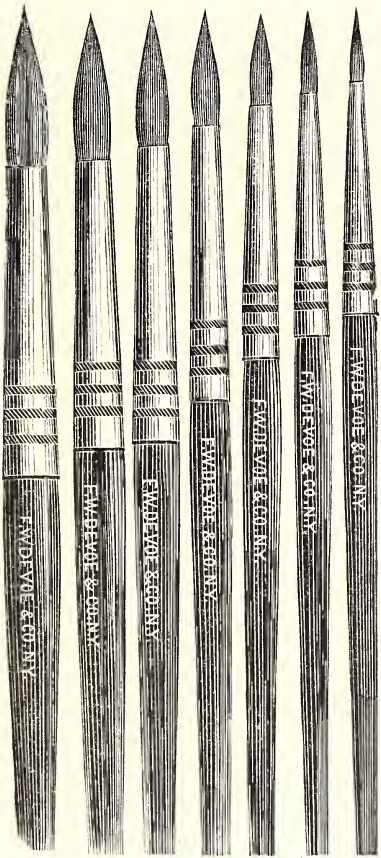
BRUSHES & PENCILS,

FOR WATER COLOR

MANUFACTURED BY

F. W. DEVOE & CO., NEW YORK.

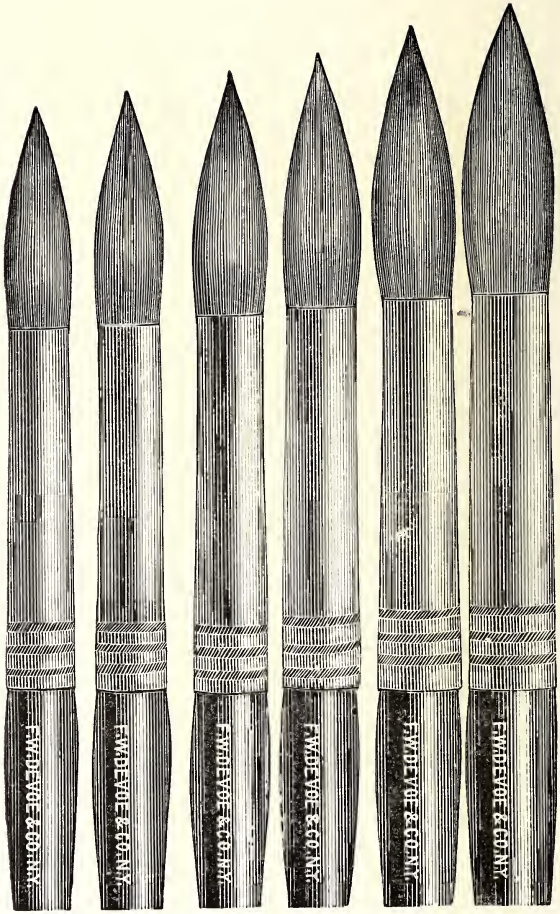
In making BRUSHES AND PENCILS, F. W. Devoe & Co. consider the varied requirements of Artists, employing only the best workmen and using the most carefully selected Hair and Bristles. Their Catalogue exhibits not only great variety, but their adoption of the most desirable Foreign Brushes of special styles, and additions to that class from their own designs; they will make for Artists, Brushes or Pencils of any particular form or quality as needed. The illustrations following this note show, as a rule, the sizes represented.



FOR WATER COLOR PAINTING.

F. W. DEVOE & CO.'S RED AND BLACK SABLE BRUSHES.

Round and Flat,—Black, Polished Handles, Albata Ferrules.

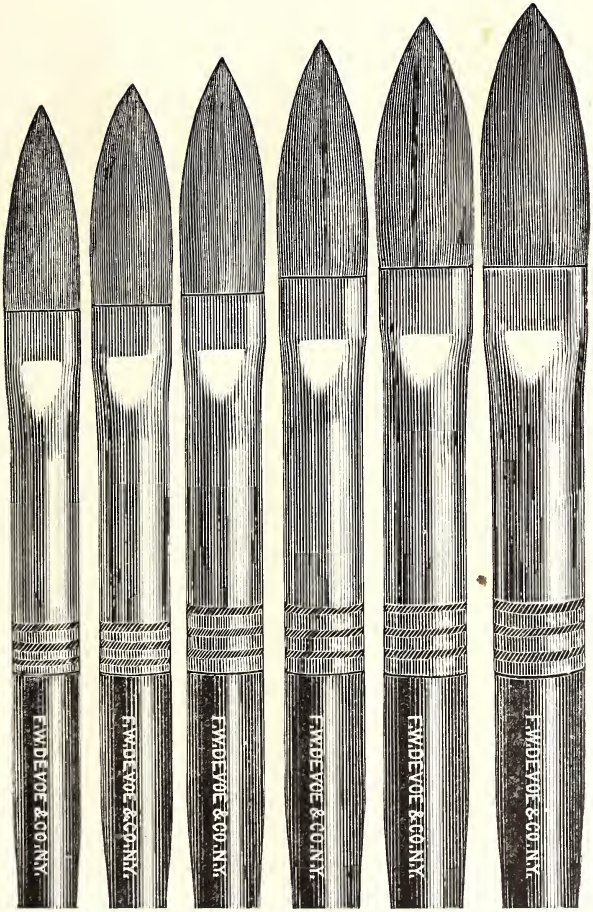


FOR WATER COLOR PAINTING.

F. W. DEVOE & CO.'S RED AND BLACK SABLE BRUSHES.

EXTRA LARGE.

Round,—Black, Polished Handles, Albata Ferrules.

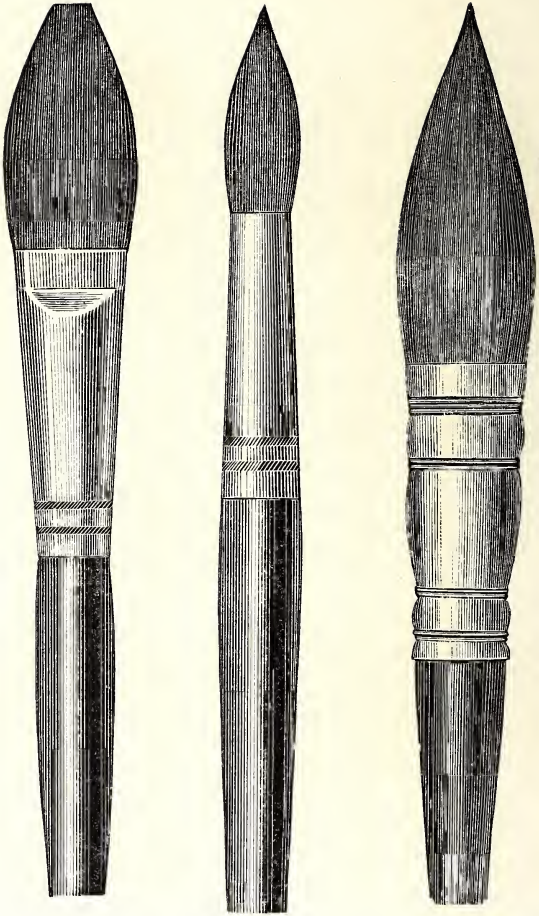


FOR WATER COLOR PAINTING.

F. W. DEVOE & CO.'S RED AND BLACK SABLE BRUSHES.

EXTRA LARGE.

Flat,—Black, Polished Handles, Albata Ferrules.



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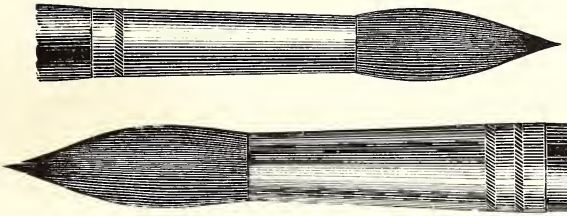
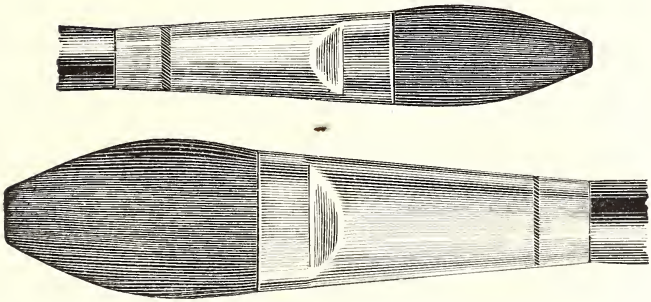
F. W. DEVOE & CO.'S SIBERIAN WASH BRUSHES.

Polished Handles.

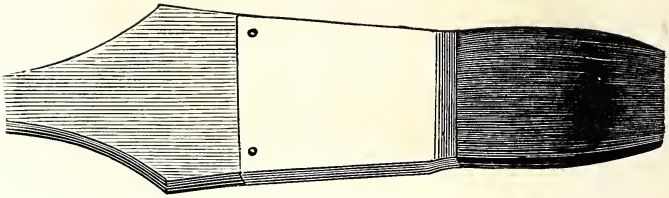




FOR WATER COLOR PAINTING;—SKIES AND LARGE WASHES.

F. W. DEVOE & CO.'S SIBERIAN WASH BRUSHES.

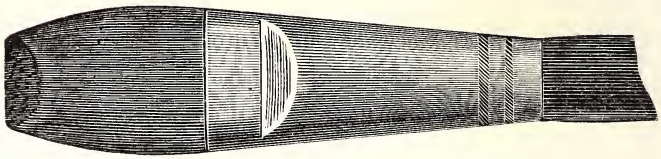
Flat,—Double End,—Polished Handles, Nickel-Plated Ferrules.



FOR WATER COLOR PAINTING;—LARGE WASHES.

F. W. DEVOE & CO.'S RED SABLE AND CAMEL HAIR BRUSHES,—BROAD,—FLAT.

Polished Handles, Nickel-Plated Ferrules.

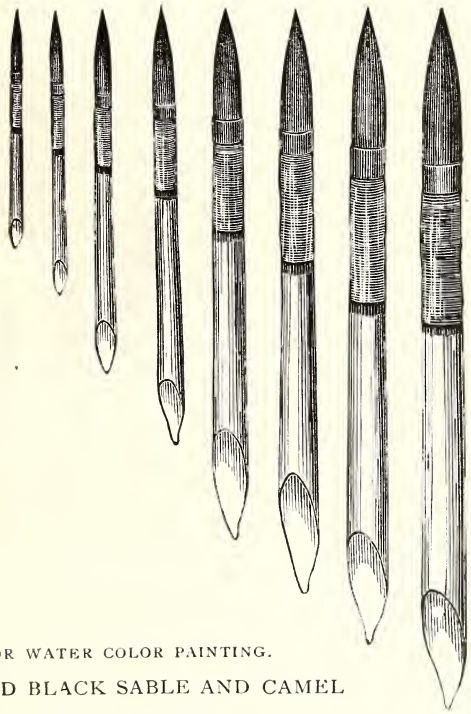


FOR WATER COLOR PAINTING;—LARGE WASHES.

F. W. DEVOE & CO.'S CAMEL HAIR BRUSHES.

CHISELED EDGE.

Polished Handles, Nickel-Plated Ferrules.



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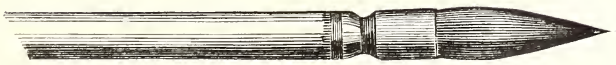
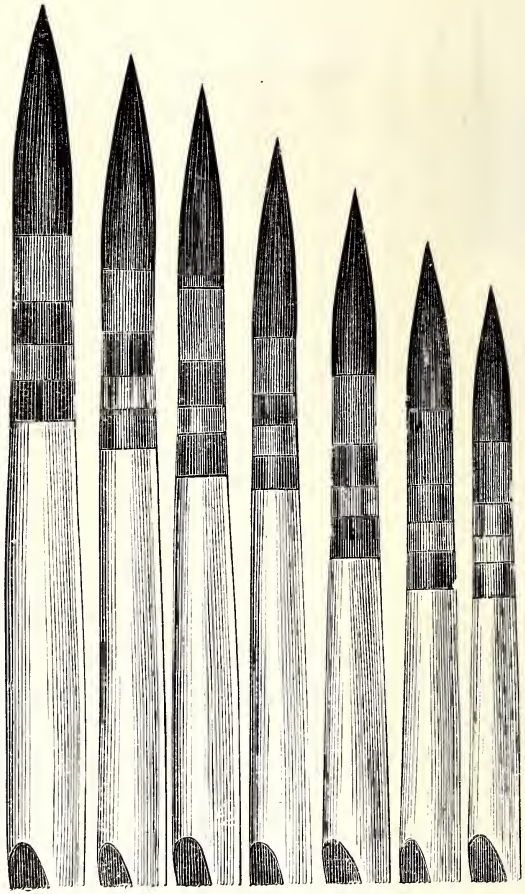
RED AND BLACK SABLE AND CAMEL HAIR PENCILS.

In Quills.



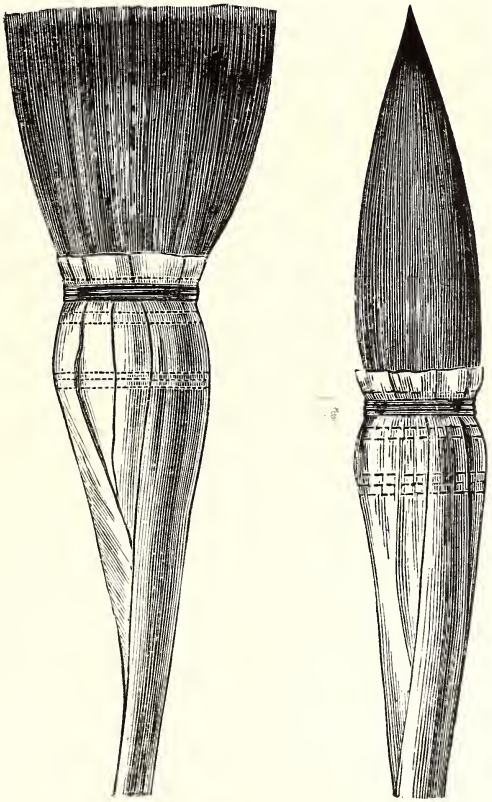
FOR WATER COLOR PAINTING.

CAMEL HAIR SWAN QUILL PENCILS.



FOR WATER COLOR PAINTING.

RED AND BLACK SABLE AND CAMEL HAIR SWAN QUILL MINIATURE PENCILS.



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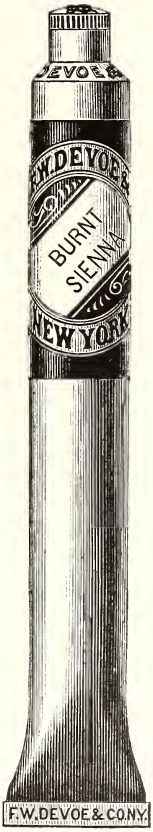

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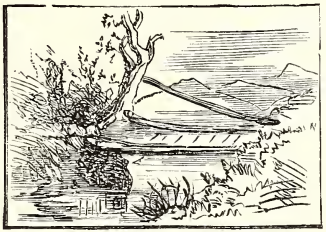

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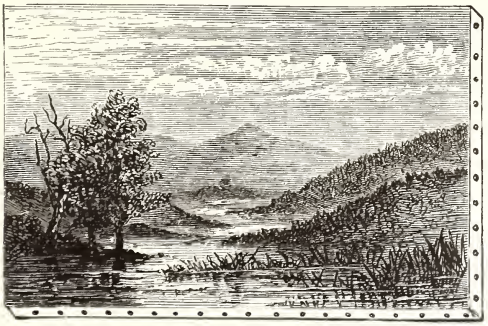

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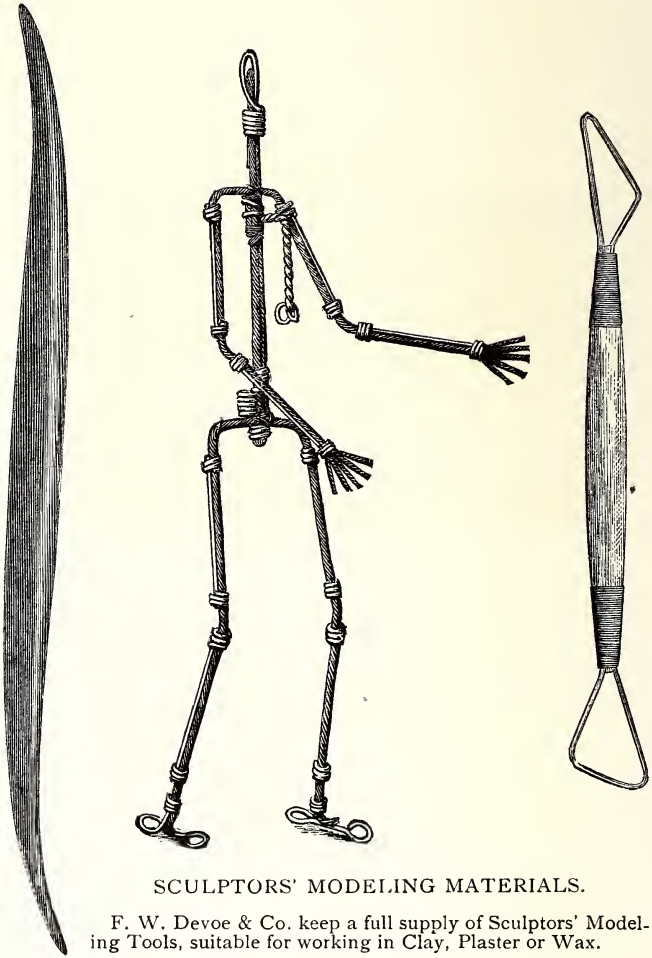

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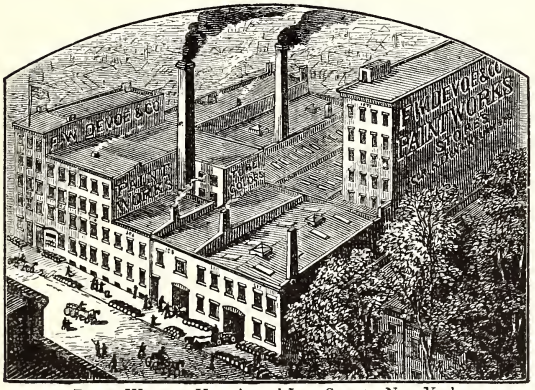

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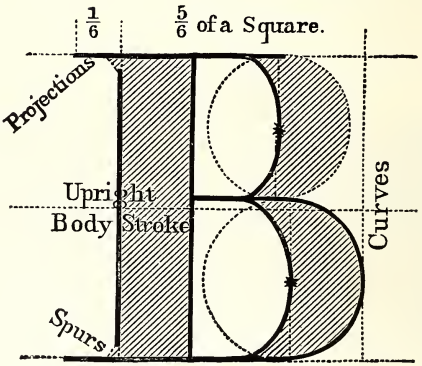

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